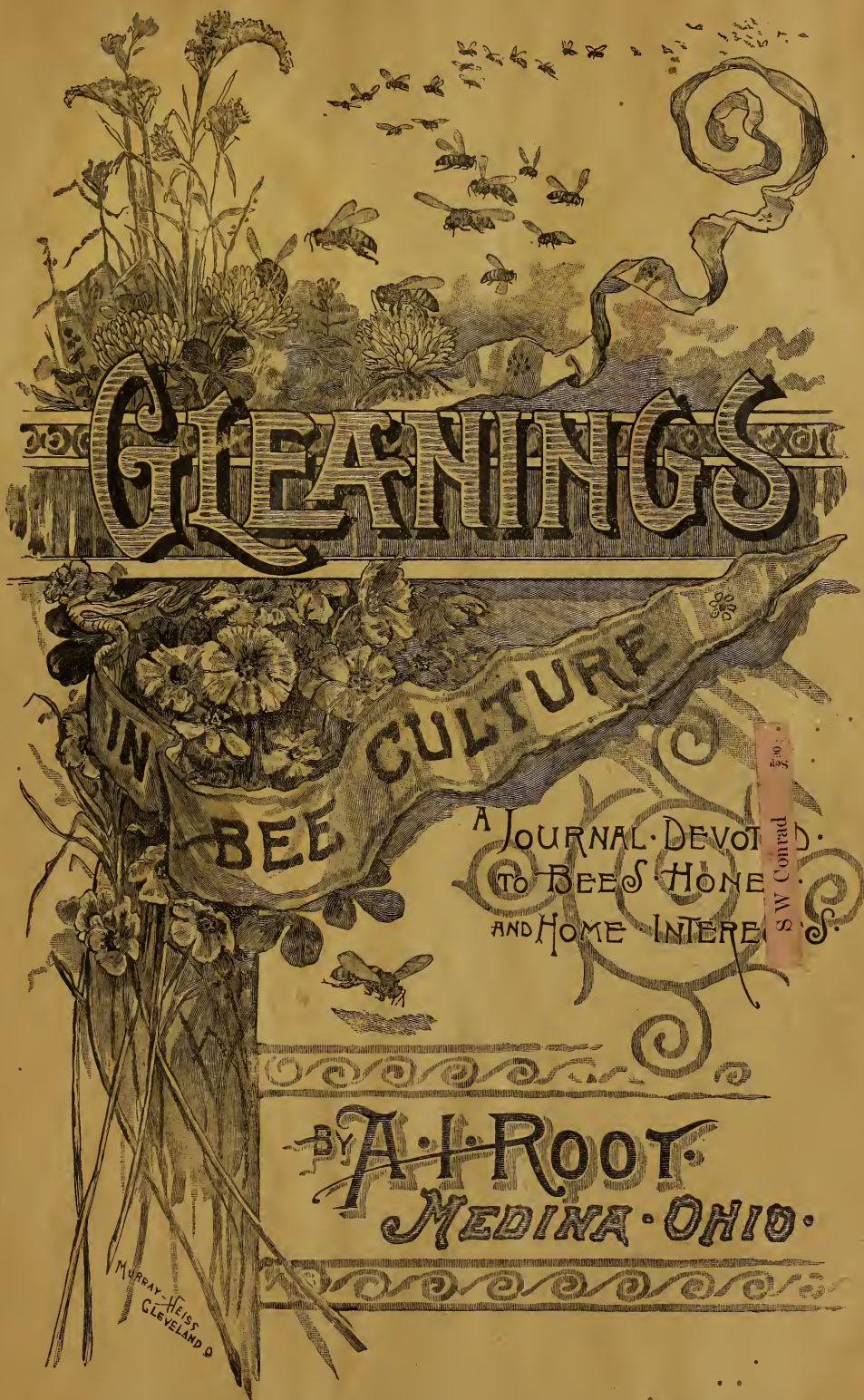


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- A. I. Root, Medina, Ohio.
P. L. Viallon, Bayou Goula, Iberville Par., La. 7td90
C. W. Costellow, Waterboro, York Co., Me. 1td90
Leahy Mfg. Co., Higginsville, Laf. Co., Mo. 9td90
Jenkins & Parker, Wetumpka, Ala. 9td90
W. T. Falconer Mfg. Co., Jamestown, N. Y. 7td

ITALIAN QUEENS.

If you want queens that are bred for business, send to me. See adv't in GLEANINGS of June 15th. Every queen warranted in every respect. Price 75 cents each.

JAMES WOOD,

11tfdb

NO. PRESCOTT, MASS.

Please mention this paper.

AMERICAN BEE JOURNAL

32 pages—\$1.00 a year—Sample Free.

The oldest, largest and cheapest Weekly bee-paper

THOMAS G. NEWMAN & SON,
CHICAGO, ILL.

Please mention this paper.

Western Bee-Keepers' Supply House

Root's Goods can be had at Des Moines Iowa, at Root's Prices.

The largest supply business

in the West. Established 1885

Dovetailed Hives, Sections,

Foundations, Extractors, Smokers, Vials,

Crates, Feeders, Clover

Seeds, etc. Imported

Italian Queens. Queens and

Bees. Sample copy of our

Bee Journal, "The West-

ern Bee-keeper," and Latest

Catalogue mailed Free to Bee-keepers.

JOSEPH NYSEWANDER, DES MOINES, IOWA.

In responding to this advertisement mention GLEANINGS.



38tfdb

MUTH'S Honey-Extractor.

Square Glass Honey-Jars,

Tin Buckets, Bee-Hives

Honey-Sections, &c., &c.

Perfection Cold-Blast Smokers.

APPLY TO

CHAS. F. MUTH & SON, Cincinnati, O.

P. S.—Send 10-ct. stamp for "Practical Hints to Bee-keepers."

Please mention this paper.

THE PECOS VALLEY FRUIT BELT OF NEW MEXICO

Over 100 miles of irrigating canals now completed, each from 18 to 60 feet wide, and carrying 5 to 7 feet of water.

Over 800,000 acres of the richest lands in the world already available for irrigation and farming under these canals, twenty-five per cent, of which are still subject to entry under the homestead laws.

Other lands for sale at \$15 to \$30 an acre and on easy terms.

The Pecos River being fed by never failing springs of immense size, the water supply for all the canals can carry is assured.

Climatic and soil conditions here are superior to those of Southern California. All the fruits grown there can be produced here, except oranges and lemons, while the Pecos Valley grows all the cereals, vegetables and grasses that can be grown anywhere on this continent, while the neighboring mines afford a home market for all products.

Our farmers raise two crops a year of grain and vegetables, five crops of hay, and stock grazes out doors all winter. Our climate is a perfect antidote for consumption and all throat and lung diseases.

Send for maps and illustrated pamphlets, giving full particulars.

PECOS IRRIGATION & IMPROVEMENT CO.,
EDDY NEW MEXICO.

In responding to this advertisement mention GLEANINGS.

GOLDEN ITALIAN HONEY QUEENS

A combination of best honey-gatherers. Bred in America. Try one. Each, \$1.00; six for \$5.00.

THE MISSOURI BEE-KEEPER.

A monthly journal devoted to practical bee-keeping; 50c a year. Above journal one year and one queen, \$1.15. Sample copy free. Address

15-16d **E. F. QUIGLEY, UNIONVILLE, Mo.**

In responding to this advertisement mention GLEANINGS.

FOR ALBINO AND GOLDEN ITALIAN QUEENS, SEND TO A. L. KILDOW, SHEFFIELD, ILL.

1 untested Albino, \$1; 6 for \$5.

1 tested Albino, June and July, \$1.75; August and September, \$1.50.

1 select-tested Albino, Aug. and Sept., \$2.50.

1 untested Italian, June, \$1; July to Sept., 75 cts.

1 tested Italian, June and July, \$1.50; August and September, \$1.25.

1 select-tested Italian, June, \$2.50; after June, \$2.

For particulars, send for descriptive catalogue.

In responding to this advertisement mention GLEANINGS.

DR. TINKER'S SPECIALTIES!

The Nonpareil Bee-hive and Winter case, White Poplar Sections, Wood-zinc Queen-Excluders, and the finest and best Perforated Zinc now made.

Send for catalogue of prices, and inclose 25 cts. for the new book, **Bee-keeping for Profit.**

Address **DR. G. L. TINKER,**21tfdb **New Philadelphia, O.**

In writing to advertisers please mention this paper.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc.

14tfdb **PAGE & KEITH,**
New London, Wis.

In writing advertisers please mention this paper.

BEST ON EARTH



ELEVEN YEARS
WITHOUT A
PARALLEL, AND
THE STAND-
ARD IN EVERY
CIVILIZED
COUNTRY.



Bingham & Hetherington
Patent Uncapping-Knife,
Standard Size.

Bingham's Patent Smokers,

Six Sizes and Prices.

Doctor Smoker,	3 1/4 in.,	postpaid	...\$2.00
Conqueror "	3 "	"	... 1.75
Large "	2 1/2 "	"	... 1.50
Extra (wide shield)	2 "	"	... 1.25
Plain (narrow)	2 "	"	... 1.00
Little Wonder,	1 1/4 "	"	... .65
Uncapping Knife	.....		... 1.15

Send promptly on receipt of price. To sell again, send for dozen and half-dozen rates.

Milledgeville, Ill., March 8, 1890.

SIRS:—Smokers received to-day, and count correctly. Am ready for orders. If others feel as I do your trade will boom. Truly, **F. A. SNELL.**

Vermillion, S. Dak., Feb. 17, 1890.

SIRS:—I consider your smokers the best made for any purpose. I have had 15 years' experience with 300 or 400 swarms of bees, and know whereof I speak. Very truly, **R. A. MORGAN.**

Sarahsville, Ohio, March 12, 1890.

SIRS:—The smoker I have has done good service since 1883. Yours truly, **DANIEL BROTHERS.**

Send for descriptive circular and testimonials to 11tfdb **BINGHAM & HETHERINGTON, ABRONIA, Mich.**

In responding to this advertisement mention GLEANINGS.

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STRAWBERRY GROWING

A CERTAINTY AND A PLEASURE

By growing the ENHANCE, a new and well-tested sort, succeeds everywhere. Most reliable, most productive, largest shipping and all-purpose berry extant. Send for description and price.

16-17d

HENRY YOUNG, ADA, OHIO.

Please mention this paper.

TESTED ITALIAN QUEENS, 75 CTS., HYBRIDS, 25 CTS.

I re-queen my yard every year. None of the queens older than one year. T. H. KLOER, 16tfdb 423 Willow St., Terre Haute, Ind.

For Sale.

A NICE SOUTHERN HOME OF 57½ ACRES,

Within one mile of churches, schools, and railroad. Healthy location, well adapted to small fruits, splendid for dairy, and unsurpassed for potatoes, as two crops can be raised here in one season. Good markets north and south of here. If not sold privately I will sell for cash in parts and as a whole on first Monday of October next.

JACOB BUCHI, Franklin, Tenn.

Please mention GLEANINGS.

NO MORE QUEENS THIS SEASON, or after this journal reaches you.

JENNIE ATCHLEY, Farmersville, Tex.

QUEENS! QUEENS!

For the rest of the season (till Oct. 1) I will sell at a discount of 20 per cent on prices given in June 15th GLEANINGS. For further particulars address W. J. JOHNSON, ACKERMANVILLE, NORTHAMPTON CO. P. A. (Satisfaction and safe arrival guaranteed.)

DON'T

you want to improve your stock? Don't you want nice large business Italians that will just "roll in the honey"? Seven years careful breeding from the best stock obtainable; 650 queens sold, and never heard of but one mis-mated. Queen large, yellow, and prolific. Warranted, 75c; 3 for \$2.00; or a select breeder, \$1.50. Your orders appreciated. Return mail.

W. H. LAWS, LAVACA, ARKANSAS.

In responding to this advertisement mention GLEANINGS.

50 TESTED QUEENS, 75c. Young Italians guaranteed in every particular. Sample 5-banded bees, 2c. 16 F. C. MORROW, Wallaceburg, Ark.

FOR SALE.

One 40-horse-power steam engine and locomotive, or fire-box boiler, in good order. Price \$500 on cars here. 16-17-18d

T. A. POTTS, Martinsburg, W. Va.

FOR SALE, 23 colonies Italian bees at \$5.00 each. Simplicity hive, eight brood-frames, one broad frame filled with sections. Plenty of honey. 16-17-18d FRANKLIN THORN, Paterson, N. J.

Wants or Exchange Department.

Notices will be inserted under this head at one half our usual rates. All advertisements intended for this department must not exceed five lines, and you must say you want your ad't in this department, or we will not be responsible for errors. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, can not be inserted under this head. For such our regular rates of 20 cts. a line will be charged, and they will be put with the regular advertisements. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange wall paper, from 5c a roll and up, for honey. J. S. SCOVEN, 12tfdb Kokomo, Ind.

WANTED.—To exchange pure Scotch collie pups for tested Italian queens. 12tfdb N. A. KNAPP, Rochester, Lorain Co., O.

WANTED.—A man to take charge of my bees. 14-15d J. S. COOPER, Quebec, Tenn.

WANTED.—To exchange select tested Italian queens for potatoes of northern production. 15-16d L. C. CALVERT, Poplar Flat, Ky.

WANTED.—All the names of persons running apple-driers. Will pay liberally for same. W. D. SOPER & Co., Box Makers, 15-18db Jackson, Mich.

WINTER cases in flat, or made up, for dovetailed hive, or supplies of all kinds, and bees and queens, in exchange for either comb or extracted honey. 15tfdb HILL M'F'G Co., Dennison, Ohio. Box 120.

WANTED.—Situation and good home in small family of an experienced bee-keeper in any State, by a woman. Am willing to help with house or bee work. Address with references, P. O. Box 535, Roseville, Warren Co., Ill.

WANTED.—To exchange new Odell type-writers for comb or extracted honey. Write for illustrations and samples of work. Valued at \$15.00. GEO. E. HILTON, Fremont, Mich.

WANTED.—A few of the American bee-keepers to send me a sample of their best strains of Italian or Carni lan queens. I will pay postage in any case, and postage and 1½ times regular cost of queen if she comes through alive. See GLEANINGS, last Jan., page 72, for Mr. Root's instructions as to mailing. JENAS WALKER, Redland Bay, 15-16d Via Frisco. Queensland, Australia.

WANTED.—To rent an apiary of one or two hundred colonies. Southern States preferred. H. FITZ HART, Avery P. O., La.

WANTED.—To exchange a foot-power saw, almost new, and a printing-press, 4½x7½, also a press 7x11, for honey. A. D. ELLINGWOOD, 16 17d Berlin Falls, N. H.

WANTED.—A situation with a bee-keeper in the west or southwest, by a young man with four years' experience. Address J. M. WORTHEN, Warsaw, Ills.

WANTED.—To correspond with Swedes and Hollanders to work in fruit orchard and gardening. 16d J. B. MURRAY, Ada, O.

WANTED.—To exchange Bubach and Gandy strawberry plants for Italian queens, plants at rate of \$1.00 per 100 in exchange. 16d DAVID LUCAS, Jewett, Harrison Co., O.

MUSICAL INSTRUMENTS
MURRAY & HEISS
CLEVELAND OHIO.
SEND FOR CATALOGUE.

Please mention this paper.

HONEY COLUMN.

CITY MARKETS.

NEW YORK.—*Honey.*—Owing to the lower prices for all sweets this year, and the generally full crop of honey, it is probable that a low range of values will rule for the latter. We do not wish, however to depress the market by making low offers, and have therefore decided to receive and sell on commission for our friends who wish to ship to us, pledging to them the highest wholesale market price, and reserving the right to purchase at this price what we require for our distributive trade. The only lot sold in this market so far this year has been a lot of 45 cases, N. Y. State fancy white, 1-lb., unglassed, light weights, which sold at 16 cents.

We will advance two-thirds of the market value on receipt of the goods. The market to-day for California extracted honey is $7\frac{1}{2}$ in carload lots. Jobbing price, 7%. Southern goods are arriving in quite large quantities, and selling from 68@74, according to quality. *Beeswax*, slow at 26.

Aug. 10. THURBER, WHYLAND COMPANY,
New York.

NEW YORK.—*Honey.*—Extracted in good supply; have already had 6 carloads from California. Demand rather limited. We quote: California 6 $\frac{1}{2}$ @7 $\frac{1}{4}$. Orange-bloom, 7@7 $\frac{1}{2}$. Southern, common, 65@70 per gallon; choice, 75@75. Basswood, 7@7 $\frac{1}{2}$. As to comb honey, it is a little too early to say exactly what it will sell for in the jobbing way. We do not wish to mislead our shippers by quoting higher prices than we can realize. For the September issue we will give full prices. *Beeswax* dull, and dragging at from 20@27.

Aug. 11. HILDRETH BROS. & SEGELKEN,
28 & 30 West Broadway, New York.

BOSTON.—*Honey.*—New honey is coming on the market from Vermont, and is certainly as fine as we have ever seen. It is starting in at from 15@16, and selling fairly well considering the extremely hot weather. We think it is a mistake to market new honey before Sept. 1; but as others are sending in their honey to this market, we, of course, have to have a little to keep along with the demand. Extracted, 6@9. *Beeswax*, none on hand.

Aug. 10. BLAKE & RIPLEY,
Boston, Mass.

ALBANY.—*Honey.*—We have received 158 cases of comb honey up to date. Last season we received none before September, showing that the crop is a month earlier this year. The quality is only fair, some stock being badly discolored. We have made sales at 15@18 for clover. No buckwheat received yet. From present indications we think the crop will be quite large. Not much demand for extracted.

Aug. 8. CHARLES McCULLOCH & Co.,
Albany, N. Y.

ALBANY.—*Honey.*—Market not fairly opened yet, but some good sales have been made at: White clover or basswood, comb, 15@14; mixed ditto, comb, 13@15; dark, ditto, 12@13. Extracted, light, 8@8 $\frac{1}{2}$; light southern, 6@7. Honey demand will improve as soon as berries and peaches are out of the way, although prices will not change much. *Beeswax*, not so firm, 27@28.

Aug. 8. H. R. WRIGHT,
Albany, N. Y.

MILWAUKEE.—*Honey.*—Demand fair for the season; later will improve. Supply of honey is enough for all wants now, but think we can take care of all that comes. We quote choice white 1-lb. sections in nice cases, 16@17; good to choice, nice cases, 15@16; dark or common quality, 10@14; extracted, white, in barrels or kegs, 7@7 $\frac{1}{2}$; dark, in barrels or kegs, 5 $\frac{1}{2}$ @6 $\frac{1}{2}$. *Beeswax* nominal, 2@25.

Aug. 5. A. V. BISHOP,
Milwaukee, Wis.

CINCINNATI.—*Honey.*—There is a fair demand for choice new comb honey, with a good supply at 14@16c a lb. for best in the jobbing way. Demand is fair for extracted honey, with a supply in excess of the demand. It brings 5@8c a lb. on arrival. Demand is good for beeswax at 23@25c a lb. for good to choice yellow on arrival.

Cincinnati, O., Aug. 8. CHAS. F. MUTH & SON.

NEW YORK.—*Honey.*—Demand still rather limited, with large supplies of extracted and very little comb honey. We quote: White comb, 14@15; extracted, common southern, 65@70; good to choice, 70@75; mangrove and palmetto, 7@7 $\frac{1}{2}$; California, 7@7 $\frac{1}{2}$. *Beeswax.*—Supply increasing, with very little demand at 25@26.

Aug. 11. F. G. STROHMEYER,
New York.

CHICAGO.—*Honey.*—The market is in a sluggish condition at present, weather being hot, and the quality of comb offered is not of high grade. The best lots bring 15@16, and extracted 6@8, with sales chiefly at 7, for white grades. The call for it is fair.

Beeswax, 28. R. A. BURNETT,
Chicago, Ill.

NEW YORK.—*Honey.*—New comb honey arriving in small quantities. Demand very light. We quote: 1-lb., 16@20c as to quality and style of package. Extracted, in good demand at 6@8c. *Beeswax* in fair demand at 28@31c for choice yellow.

July 16. F. I. SAGE & SON,
188 Reade St., N. Y.

ST. LOUIS.—*Honey.*—There is very little of change to report. Comb in good supply, but light demand at 10@13c according to quality. Strained and extracted at 5 $\frac{1}{2}$ c in barrels, 7c in cans. We consumed a few days since the largest sale of the season—40,000 lbs. extracted to one party at 5 $\frac{1}{2}$ c.

Aug. 8. D. G. TUTT GROCER CO.,
St. Louis, Mo.

COLUMBUS.—*Honey.*—White-clover honey scarce and wanted. Selling at 16c for choice white. Home crop not amounting to any thing.

Aug. 8. EARLE CLICKINGER,
121 S. 4th St., Columbus, O.

DETROIT.—*Honey.*—Comb honey is in light demand, and selling at 13@14. Extracted, 7@8.

Beeswax, easy at 26@27. M. H. HUNT,
Aug. 10. Bell Branch, Mich.

WANTED.—Comb and extracted honey. Address
H. G. CAMP, Winona, Ohio.

60-lb. cans linn honey, 8c; dark, honey dew, 5c. In sections, linn, 15c; dark, 8c.

OLIVER FOSTER, Mt. Vernon, Linn Co., Ia.

FOR SALE.—2000 lbs. well-ripened linden extracted honey, in iron-jacket cans, 7c per lb., f. o. b.

Mrs. N. M. OLSEN, Nashotah Mission, Wis.

I am prepared to furnish pure extracted honey in 60-lb. tin cans. New cases and cans; graded goods. Carloads a specialty. Address
E. LOVETT,
11tfdb San Diego, Cal.

Honey, Beeswax, Etc.

We are now in position to receive honey and beeswax on consignments, and to obtain best market prices for comb and extracted honey. Last year we could have disposed of as much again honey as we received, and our outlet this year will be still better. Correspondence solicited.

CHAS. ISRAEL & BRO.,
110 HUDSON ST., N. Y.

Dealers and Commission Merchants in Honey, Beeswax, Maple Syrup, Sugar, etc. 16tfdb
Please mention this paper.

ITALIAN QUEENS FOR SALE.

July and August, tested, \$1.00; untested, 75 cts. Bees at \$1.00 per lb. Make money order payable at Waynesburg, Greene Co., Pa.

9-16db MRS. A. A. SIMPSON, Swarts, Pa.
Please mention this paper.

YELLOWEST ITALIANS.

My bees are the brightest and gentlest bees, and for honey-gatherers are equal to any. Send 5 cts. for sample and be convinced. One queen by mail, 75c. 25 tested Italian queens one year old, 75c each. These are fine ones, so don't miss this chance. Untested queens, August and September, 75c.

J. F. MICHAEL, German, Darke Co., Ohio.
Please mention this paper. 11-17db

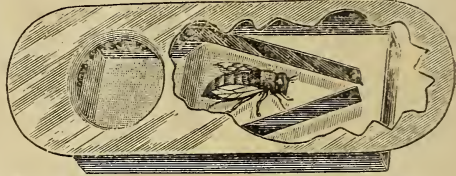
ONE COLONY Saved from Death the Coming Winter Would Repay the cost of a copy of "ADVANCED BEE CULTURE" ten Times Over. In 5 of its 32 Chapters may be Found the Best That is Known upon Wintering Bees. It costs 50 cents but its Perusal may Make you \$50 Richer next Spring. The "REVIEW" and this Book for \$1.25. If not Acquainted with the "REVIEW," send for Samples. W. Z. HUTCHINSON, Flint, Michigan.

Porter's Spring Bee-Escape.

We guarantee it to be the best escape known, and far superior to all others. If, on trial of from one to a dozen, you do not find them so, or if they do not prove satisfactory in every way, return them by mail within 90 days after receipt, and we will refund your money.

PRICES:—Each, by mail, postpaid, with full directions, 20c; per dozen, \$2.25. Send for circular and testimonials. Supply dealers, send for wholesale prices.

10tfdb R. & E. C. PORTER, LEWISTOWN, ILL.



PATENT WIRED FOUNDATION.

The Greatest FOLLY of MODERN BEE-KEEPING is WIRING BROOD-FRAMES

—Dr. G. L. Tinker.

OUR WIRED BROOD FOUNDATION is BETTER, CHEAPER, and not HALF the trouble to use that it is to WIRE FRAMES. Many may confound the two, but they are ENTIRELY different.

J. VAN DEUSEN & SONS, Sole Manufacturers, Sprout Brook, Mont. Co., N. Y.

In responding to this advertisement mention GLEANINGS

6-41



A glimpse of our Factory, now making carloads of Dovetailed Hives, Lang. Simp. hives, plain Lang. hives, Alternating hives, Chaff hives, sections, etc. Many articles not made by others.

We can furnish, at wholesale or retail. Every thing of practical construction needed in the apiary, and at Lowest Prices. Satisfaction guaranteed. Send for our New Catalogue, 51 illustrated pages, free to all.

E. KRETCHMER, Red Oak, Iowa.

In responding to this advertisement mention GLEANINGS.

PASTEBOARD BOXES.

CRAWFORD'S SECTION CARTONS ARE JUST WHAT YOU WANT.

SEND FOR NEW PRICE LIST.

A. O. CRAWFORD,

11tfdb

SOUTH WEYMOUTH, MASS.

In responding to this advertisement mention GLEANINGS.

GOLDEN ITALIAN QUEENS.

Our 5-banded Italians are giving perfect satisfaction; gentle, excellent workers, non-robbers, and the most beautiful bees in existence. Won first premium at Illinois State Fair in 1890. The judge said, "The drones are the yellowest I ever saw." Queens warranted purely mated; and replaced if they produce hybrid bees. One warranted queen, \$1.00; six for \$5.00; tested, July, \$1.75; after, \$1.50; selected tested, \$3.00; breeders, the best, \$5.00. No foul brood. Safe arrival and satisfaction guaranteed. Reference, our P. M.

S. F. & I. TREGO, Swedona, Ills.

Please mention this paper.

11tfdb

Bee-Hives, Sections, Etc.

BEST GOODS at LOWEST PRICES.

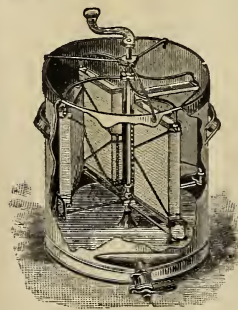
We make 15,000 sections per hour. Can fill orders promptly. Write for free, illustrated catalogue.

G. B. LEWIS CO., WATERTOWN, WIS.

In responding to this advertisement mention GLEANINGS.

16 SWARMS OF GOLDEN ITALIAN BEES FOR SALE at \$3 per colony; all on wired L. frames, built from foundation in chaff hives.

15-16-17d T. S. THOMPSON, Box 240, Blairsville, Indiana Co., Pa.



5tfdb

Please mention this paper.

EVERY THING USED BY

BEE-KEEPERS.

EDWARD R. NEWCOMB,

Pleasant Valley, N. Y.



Bee-Keepers' * Supplies.

We are prepared to furnish bee-keepers with supplies promptly and at lowest rates. Estimates gladly furnished, and correspondence solicited. Our goods are all first class in quality and workmanship. Catalogue sent free. Reference, First National Bank, Sterling, Ill. Address

21-20db

WM. McCUNE & CO., Sterling, Illinois.

In responding to this advertisement mention GLEANINGS.

I RE-QUEEN EACH SEASON,

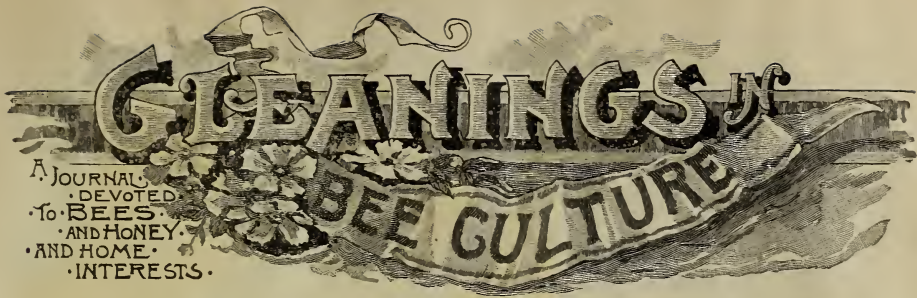
Consequently am selling fine one-year-old Italian queens, tested, at 75 cts. each.

14-15-16d

J. C. WHEELER, Plano, Illinois.

SEND NOW to P. H. Fellows, Brodhead, Wis., for Strawberry-plants. Crescent and May King, 60c per 100; \$4 per M. Bubach and Jessie, 75c per 100. Mention this paper.

14-15-16d



Published Semi-monthly at \$1.00 per year, by A. I. Root, Medina, O.

Vol. XIX.

AUGUST 15, 1891.

No. 16.

STRAY STRAWS

FROM DR. C. C. MILLER.

DOES MELILOT produce pollen? I have not seen bees gathering pollen from it.

DRY CEDAR BARK, cut short and pounded fine, is the favorite smoker fuel of the *C. B. J.*

"ABSENCE of occupation is not rest; A mind quite vacant is a mind distressed."

"BEES SWARM," says Miles Long, "because it's swarm. That's how the bees be-hive in Canada."

WEDGING UP SECTIONS in a T super after E. R. Root's plan works very satisfactorily with me so far as I have tried it.

THE PORTER ESCAPE is a big success. Put one under a finished super to-day, and to-morrow the super is ready to carry into the honey-room.

THE *Western Bee-keeper* gets rid of laying workers by placing the whole colony over another containing a laying queen, and extracts later. A good way too.

GASOLINE is a good thing—makes a better fire than wood to cook by if you don't want your wife roasted, and is a grand thing to use for moths and bedbugs.

TWELVE SECTIONS in each super is what I am using now, Aug. 1, putting back the unfinished sections in hopes of getting them sealed, in spite of the bees working so slowly.

J. A. GREEN has a rose-bush with 12 kinds of roses budded on it. I suspect that a good many bee-keepers are great lovers of flowers. It's a pleasure that leaves no bad taste in the mouth.

I COMMENCED the season with 236 colonies; and if I had it to do over again the number would be 36 less. I'd rather have less honey, and have enough time to sleep, and look at my roses.

QUEENS OF SECOND SWARMS, according to H. Spuhler, in *Revue Internationale*, are better than the queen left in the old hive, mainly because there is a choice of several queens in the second swarm.

JULY 20, bees commenced robbing, and storing let up, although clover bloom was abundant, and plenty of young blossoms coming on. Some of the time, however, honey shook out of the combs. It's a mixed mess.

ON PAGE 589 Rambler goes even beyond Prof. Cook's teaching, using "we" and "I" and "he" with such rapid changes that it makes one dizzy, changing nine times in the course of his article. Prof. Cook has much to answer for.

A SURE SIGN of swarming, says *C. B. J.*, is the back and forward movement of the bees on the front of the hive and alighting-board, sometimes called "raking." "After they commence doing that they are almost sure to swarm the same day, and will very seldom, if weather is favorable, wait till the next."

LAYING WORKERS have been very easily cured in the few cases I have tried, by simply dropping into the hive a young queen just hatched, and I have generally pulled the young queen out of the cell without waiting for her to hatch. But further trial is needed to see if it will always work. Will others try it and report results?

CRIMSON OR SCARLET CLOVER has a good report for West Virginia from R. A. Little, in *National Stockman*. He says, "I have tried a number of different grass and foliage plants the last few years, and am better pleased with the crimson clover than any thing else."

It is a beautiful sight when in full bloom, and I never saw so many bees on one acre of ground."

TOP-BARS, reinforced with strips of separator $\frac{1}{2}$ of an inch wide, have worked just as well, this season, as slat honey-boards. But then I had them in only one hive, and the bees of that hive may have had something to do with it. The top-bars were $\frac{3}{4}$ wide, and most of my top-bars are one inch wide. I wonder whether it will do to make them $1\frac{1}{2}$ wide with the separator, or would it do to use strips of tin?

FOR OUT-APIARIES I know of nothing to come up to the little mosquito-tents in the way of bee-escapes. Where desirable to leave on over night, the Porter escape is better; but if you want to rush the thing through the same day, smoke the bees out pretty well before taking off, pile 15 or less in a pile, and then put on a tent. In that way we took off and brought home 75 supers from the Wilson apiary July 21.

VIRGIN QUEENS may yet become a proper article of commerce. I received two virgin Punic queens from "A Hallamshire Bee-keeper," England; and although they were ten days in the mail on the way, by following his instructions they were safely introduced. Think of it! A virgin queen crossing the ocean and a good part of the American continent, knocked about in the mails till ten days old or older, and then safely introduced!

A SATISFACTORY BEE-BRUSH is yet to be invented. I can make a good brush, but it is good for only a day. Tie together a good lot of mayweed, goldenrod, sweet clover, timothy, or some other plant 18 to 24 inches long. Let the tops of the plants be all laid together, so it is big at the brush end, and use enough so that it is all that can be comfortably handled at the

butt end. While it lasts it is perfection, taking a whole side of a frame at one sweep. To be good, a brush must be *big*.

I HAVE RECEIVED a sample of the Punic bees. They don't look as I expected. Black! I should say they were black. I never saw black bees before. The common bee is brown beside them. Of course, one can judge nothing of their value by their looks. Such great things are claimed for them that the story looks a good bit fishy. But we must not judge hastily. So far, I only know that they are distinct in looks.

HONEY-PLANTS.

FRIEND HEDDON GIVES US SOME SUGGESTIONS.

By the above heading I have reference to such honey-plants as we bee-keepers have from time to time planted with our own hands. I need not tell you, Mr. Editor, that I am somewhat outspoken, and quite apt to express bluntly any honest opinion which is pressing hard; but one of the times when I was astonished, but did not say much—not a half nor a fourth what I felt like saying—was when the commission of bee-keepers tramped off down to Bro. Chapman's, in New York, to investigate a honey-plant which had no reasonable backing; but, on the other hand, all that had been written and said about it indicated that it could never be a success, if for no other reason, for the fact that it couldn't stand alone after being started, but must be watched and tinkered all the time to keep it even with grass and weeds. For the average bee-keeper I have no faith in the use of good land specially for raising honey-plants; but for the case of gathering seeds and scattering them in waste places, I have great faith. If the Chapman honey-plant is in no way noxious, yet, when once started, will assert supremacy over grasses and weeds, at the same time readily yielding to the plow, and is a good honey-yielder, bearing at a time when the general yield is not on, then it would be worthy of the inspection of a commission; but there were to me no such evidences. Well, I see that you are now satisfied that the Chapman honey-plant was never in the race.

I have tried many kinds of honey-plants, among them the Simpson and spider; but from two only have I received any profit; and those are sweet clover and pleurisy. Both are tenacious, good yielders, both yielding at a time when we used to suffer a complete dearth; both increasing about my apiaries so rapidly that, at this moment, the colonies in each apiary are gradually storing surplus, instead of robbing and stinging. The result is profit and pleasure combined. The sweet clover spreads and increases faster than the pleurisy; but the latter is the best honey-yielder—yes, the most copious yielder of nectar of any blossom we have, basswood not excepted. It is now yielding abundantly; and I only wish that commission were here to see the bees go for the nectar plainly to be seen in every petal. So far as I can discover, this plant has not a fault; and one point greatly in its favor is, that it is a perennial.

No doubt yourself and many of your readers remember about the splendid reports from the epilobium, or great willow-herb (some called it purple fireweed), which came in from northern latitudes a few years ago. One brother near Duluth, Minn., reported an enormous yield from this plant alone—something like an average of 100 pounds of comb honey per colony. I have made three trips to the northern part of this State, and each time watched this splendid honey-plant carefully. As stated in Gray's

Botany, I saw no specimens south of 43 to 44° north latitude. Now, what do you think?—a clap of thunder from a clear sky. Some two weeks ago, while riding with a party of friends to a summer resort ten miles north of this place, I saw, by the roadside, as many as a dozen plants of the genuine epilobium, and no mistake. I stopped the procession and went to the spot and picked some heads to make sure, and brought some home just in time to show them to "Rambler," whom I found in my office at the time. A few days later I found another and larger patch, six miles east of the former one, and so I now believe we are to enjoy the blessings from this plant, here in latitude 42°. We must not forget that our bees are the main factor in the sure increase of any new honey-plant. It may be that these plants are a little fitter to survive this climate than their cousins of the North. I shall gather a lot of the seeds of these more southerly specimens of the epilobium, and plant a lot in my garden. I shall have to drive 21 miles several times to get the seeds from both patches; for, while the lowest pods are seeding, the middle is in blossom and the top in bud yet. If I succeed in "running in" this plant as I have the pleurisy and sweet clover, I shall have a continuous surplus honey-flow, all of nearly one magnitude, from the opening of white clover to the closing of golden-rod, the weather being equally favorable, and that, too, without the use of a foot of land fit for any other purpose, and without making any noise about it to incite my neighbors to the unprofitable attempt of raising honey in an already occupied field. JAMES HEDDON.

Dowagiac, Mich., Aug. 1.

[Friend H., the only objection to what you propose, that I know of, is the complaint that has often been made, that we bee-keepers are scattering weeds along the fences and roadsides, that may increase so as to be a pest to the farmers. In our locality there is not very much waste ground. It is getting to be fenced and occupied for something, if not more than pasture; and our plowed and cultivated fields are quite generally dispensing with fences, so the crops come clear up to the road. The purple fireweed will grow here with very little encouragement; but I hardly think it would make its way by itself.]

THE KEENEY METHOD OF WIRING FRAMES.

THE BULGING OF THE FOUNDATION, ETC.

When this method of wiring frames was first made public we were just wiring a lot of frames for use the coming season, and I made haste to try the new plan. It looked well, worked beautifully, and I was delighted to think that the wires on the outside of top and bottom bars could at last be avoided. But by the time a few sets of frames had been made up I began to be doubtful; and the more I thought of it, the less I liked the plan, so I told my helpers we would wire frames the old way until we saw how the new plan worked in practice.

When I saw the first frame of comb built on those wires I said, "Just as I thought. Another of those things that look well but won't work when you come to try them." The foundation had bulged out at every one of the large openings, making a most unsatisfactory comb. The top had not lopped down, because we had fastened it with melted wax and rosin; but the combs were so uneven that I did not want them in the brood-chambers of my hives. I was perplexed and astonished, though, when it seemed that others were making a success of it. You

continued to advocate it in your catalogue, and even reduced the amount of wiring, making the openings larger than they were with the original plan, and very much larger than in the shallow frames I use. The only way I could account for the difference in results was by supposing that the very thin foundation I use was responsible for my failure, so I kept still. I have since had several hundred frames wired by this method, but they were to be used as extracting frames, spaced 14 inches apart. No brood will be raised in them, and after they have been uncapped once or twice it makes no difference how irregular the septum is. For brood-frames, though, I have never found any plan of wiring as satisfactory as the old way—with diagonal wires and tin center-bar. You have complained that brood was not reared in the cells over the tin bar. My bees rear brood over the center-bar about as well as elsewhere. I think the trouble with you was, that the bars were made like some you once sent me—three-cornered instead of flat. If the bar is folded flat, and properly put in, I should think it very strange if the queen did not, in time, lay in the cells over it as well as anywhere else.

DRONE COMB IN HIVES.

In my answer to Question 190, I meant to say that my *combs*, not *colonies*, are originally all worker, and that I try to keep them so. I do not know whether it was my mistake or the compositor's. It is practically impossible to keep all the drone comb out of a hive. The bees will build a few cells along the bottoms, or in the corners of the combs, and these are all they need. Sometimes they will tear down worker comb, and build drone comb in its place; and any holes made in the comb by mice, or other accident, are apt to be filled with drone comb. If there was more than one or two square inches I would cut it out and replace it with worker comb. I think the bees would get along just as well without drones, if it were practical to get rid of them entirely. I would much rather not have any drone comb in a hive, even when used for extracting above a queen-excluder. The queen is often tempted up stairs thereby. Most of the excluding-zinc sold will allow a queen to get through, if she wants to get through badly enough. Even when it is impossible for her to get through, the bees will sometimes save drone-cells for her to lay in, sometimes even standing considerable crowding before they will put honey in these reserved cells. Do you say that this great desire for drones shows that they ought to have them? By no means. They will do just as well without them, and it is unnecessary to humor them. Man can improve on Nature's ways in many respects, and this is one of them. Of course, we want to encourage drone-rearing in some colonies for breeding purposes.

CLARIFYING WAX WITH SULPHURIC ACID.

The articles on this subject, while very valuable to those handling large quantities of wax, have been, as some one has complained, of very little use to the average bee-keeper, because they conveyed the idea that expensive apparatus, and especially steam under pressure, was necessary. Small quantities of wax can be clarified in this way just as well as large ones, and by the simplest means, though of course with a little more trouble and labor, proportionately.

Take the ordinary earthenware milk-crock or stew-pan, such as are found in most households. Put into this about a quart of water, and add a dram or two of sulphuric acid. Put in wax enough to fill within an inch or two of the top, and bring to a boil. Care must be taken not to heat the crocks too rapidly, or to have

the stove too hot where they are. You will save time by heating the water, crocks, and wax, separately, but great care is necessary in uniting sulphuric acid and hot water. The union of sulphuric acid and water—even cold water—generates a large amount of heat; and if the water is already hot there may be an explosion, which might be dangerous. Let it boil gently for fifteen or twenty minutes, stirring it well meanwhile. Watch it very carefully, that it does not boil over. Keep a dipperful of cold water in one hand, while you stir with the other, and add a little whenever there is any sign of boiling over. Let it cool in the crocks; or, the top may be carefully dipped or poured off into molds. You will be surprised to see what nice yellow wax you can make from the blackest and dirtiest scrapings. With crocks enough, a great deal of wax may be clarified in this simple way without much labor, though if you have much to refine you will want something less fussy and more expeditious.

THE HONEY-YIELD.

What's the matter with white clover? For another season our old friend and stand-by has gone back on us. The fields were white with blossoms, the weather seemed favorable, and we had reason to expect a good yield. But scarcely a bee was seen on clover, and the honey stored in the hives was the dark, thick, and wretchedly tasting honey-dew. Didn't the clover yield any honey, or did the bees prefer the honey-dew? Basswood yielded well, but there is not much of it here. Sweet clover has yielded fairly well, but the farmers have taken it into their heads that the roadsides must be mowed. Ragweed, dock, cockle-bur, and their allies, had possession of the roadsides for years, and no one was alarmed or moved to action. For that matter, they are not yet, where those are the only weeds. But sweet clover is a conspicuous plant. A stalk of it makes more show than a dozen ragweeds. What other reasons there are for its destruction might make an interesting study. The flat has gone forth that sweet clover must be exterminated from the roadsides. In this they will never succeed until they improve their methods. It will continue a struggling existence, but this almost unobjectionable weed, the only one of any use to anybody, is under a ban, and the crop of the bee-keeper will be many a pound lighter in consequence.

J. A. GREEN.

Dayton, Ill., Aug. 4.

[The Keeney method of wiring has generally given good results; and the reason why you had such badly bulged combs was as you say because you used such thin foundation. In all our wired frames, we have been using what is called "medium brood," which I suspect is a heavy grade of foundation compared with what you have been using, hence difference in results. The Keeney method, which we continued to advocate, however, I think was better than the original plan; and the scheme of having it wired the other side up, as I recently explained in GLEANINGS, gives still better results. We have been continuing our experiments with the horizontal wiring, the wires being left loose, and using all grades of foundation, from the heaviest to the thinnest we can manufacture in large sheets; and the result has been uniformly perfect combs. Combs built on the perpendicular plan of wiring are good, but they do not compare with these on the horizontal loose wires. Try it and see. But be sure to leave a good big $\frac{1}{8}$ inch between the edge of the fdn. and the bottom-bar, to allow for stretching. The thinner the foundation, the more space will be required. Remember that this horizon-

tal plan is the one used so successfully by the Dadants, Geo. E. Hilton, and others.

In the articles on clarifying wax with sulphuric acid, we did not intend to have the impression conveyed that expensive apparatus must be used. However, most of our readers like yourself could readily adapt them to their own use. Steam under pressure is not necessary, but it is a great convenience. I have no doubt you can use the milk-crock for rendering small quantities very nicely. Yes, the acid does have a wonderful effect in improving the color of wax; and I propose to talk about it until bee-keepers generally will use it, even in rendering out small quantities. It is well known that yellow wax brings several cents more per pound; and the expense of the sulphuric acid is so little in comparison with the returns in dollars and cents, that no intelligent bee-keeper who has very much wax to render should neglect to try it, especially if he has any regard for profit.]

E. R.

FIXED FRAMES.

DR. MILLER SHOWS HOW THE LOOSE FRAMES
KILL MORE BEES.

Bangs wanted to know on what frame I had settled.

I said, "I haven't settled. As you know, I am trying several, and I don't know yet which I like best. On what have you settled?"

"Oh!" said he, "I'm well enough satisfied with the old loose hanging frame. Even if any thing else were better, have you any idea they are enough better to pay for the trouble and vexation of havin' a half-dozen different kinds in your apiary, and throwin' away or changin' over all your old ones that have done you good service, and that you know are good?"

"I've no notion," I replied, "of changing every thing in a day. For a long time I have been dissatisfied, to have my frames $\frac{3}{8}$ of an inch longer and $\frac{1}{8}$ of an inch shallower than the Simplicity, although I don't suppose in actual results there will be difference enough to notice; but I should like to be in line with others, and to have what comes nearest to being standard, if I can do so without too much sacrifice. So, as fast as any of my hives become too old for good service I want to replace them with Dovetailed hives; and as the frames must also be changed, it is of some importance to find out just what is the best."

"Well," said Bangs, "what's the matter with just changing the size and having loose frames? If I remember rightly, it was a man just about your size that once told me he wouldn't tolerate a frame that he couldn't move about in a hive as he pleased."

"Yes," I said, "I did say so; but we are learning all the time. At that time, the only advantage I could see in fixed frames was the convenience of having them always ready for hauling without any danger of having frames swing or slide out of place. While that is a very important matter to some, it is not so much so to me, for I live in a rather level country, and can haul my hives without having the loose hanging frames fastened otherwise than by propolis. Still, there are times when fixed frames would be better, for sometimes I should like to open a hive before hauling it away in the spring, but can not do so without breaking up the fastening of bee-glue. But there were other things that I did not realize at that time. Now, Bangs, will you please tell me some of your objections to fixed frames?"

"I'll give you one objection," said Bangs, "that's enough to knock the whole business. It's this. If the distance is fixed, all combs must be

just so far apart from center to center, no matter how thick the combs be, and no matter whether they are bulgin' or hollowin'. Now, you know well enough that some combs are different from others, and one ought to have a chance to space them different."

I didn't make any reply, and for a few minutes we talked about something else. I then said, "Bangs, how far from center to center do you think brood-combs ought to be spaced apart?"

"Scant $1\frac{1}{2}$," said he. "Mine are all that distance."

"Don't you think it would be handy," said I, "to have some arrangement by which you could be sure that your frames were always properly spaced, without any danger of mistake?"

"No," said he, "I wouldn't give a cent for any thing of the kind. I'm so used to it that I can space them exact just by lettin' a finger of each hand be squeezed just so much."

Said I, "Are you sure that all your frames, every one of them, are so exactly spaced?"

"Yes, sir," said he, emphatically; "you may look through my hives, and measure between the top-bars, and you'll find them alike all through."

"Now, see here, Bangs," said I, "if you try to space all frames at exact distances, what becomes of your objection to fixed distances that you can't space according to your combs? According to your own story, you try to have fixed distances now, without the convenience of doing it quickly, and being sure that it is entirely exact."

He looked down for a minute and scratched his head, and then, like the good-natured fellow that he was, he broke out into a hearty laugh. "Well," said he, "I don't know that it ever came to me before that I was using any thing like fixed distances. I guess you've got me. But I'll tell you another objection that you can't get over so easy. Whatever toggery you use to keep your frames at fixed distances, you're sure to kill a lot of bees; and with loose frames, they don't touch, so you can't kill any bees."

"I'm not so sure," said I. "You know that it is claimed that, by having the right space made exact, together with thick top-bars, there are no burr or brace combs. Now, don't you believe that your burr-combs make more trouble than the end-bars touching together, if it is true that such burr-combs can be avoided?"

"Why, no," said he, "I didn't suppose so."

"Well, you think about it. Bits of comb and honey are put without stint between the top-bars, and when a bee gets to licking up honey in such a place, you must give her a pretty rough squeeze, perhaps several of them, before she is ready to move on. Then when you go to replace your honey-board it's still worse. You can't see what you are doing; and unless you go very slowly and carefully you are sure to kill a number of bees, probably more than you ever know of; for by the next time you open the hive the dead bees are all cleared away. Now, suppose the only chance to kill bees is by having the end-bars come together; don't you see there is less surface comes together, even if the whole of the end-bars touch, than the combined surfaces of burr and brace combs that come together between top-bars, and between top-bars and honey-board? But even if the space between end-bars were much greater, you know very well that a little touch will make a bee get out of the way when it is standing on the bare wood of the end-bar; whereas you may mash it sometimes before it will get out of the way when on a spot daubed with honey."

"Well, now," said Bangs, "I guess it's jest accordin' to how we're used to things. Mebbe

if we'd git used to it, like them New York fellers, we'd change our notions, and I guess you better give the thing a fair trial, and I'll watch how you come out. At any rate, I didn't know before, or leas'tways I hadn't thought of it, that I was usin' fixed distances, and smashin' more bees than closed ends would." C. C. MILLER.

Marengo, Ill.

[You cornered Bangs completely, and there are more bee-keepers just like him. Although they disclaim it, yet, at the expense of a great deal of time and labor, they try to maintain between their frames a fixed and invariable distance.]

E. R.

IMPROVING BEES, ETC.

IMPROVING RACES OF BEES BY SELECTION, ETC.

A correspondent wishes me to tell the readers of GLEANINGS my opinion as to the effect of breeding, on black bees, had the same course and untiring energy been spent on them in trying to improve them which has been put upon the Italian bees, and winds up by saying, "Would not the black queen now be larger, finer, and more prolific, etc., had such a course been pursued?"

Undoubtedly there would have been some improvement in the black or German bee, had the apiarists of the United States taken hold of the matter with the same will in breeding which they have shown in breeding the Italian bee up to its present standard; but I do not think that the effect would have been as marked on the German bee as it has on the Italian, for the simple reason that the black or German bee is a fixed race or variety, while the Italian bee is nothing more than a hybrid, in my opinion. Any race of animals which are fixed and constant in their breeding, can not be improved nearly so easily as can one which is liable to sport. The same holds good in the vegetable kingdom, all of our best varieties of vegetables being obtained from "sports." Breed black queens as carefully as you may, they will not vary a particle as to color, while the Italian queens vary from a queen nearly if not quite as black as any black queen, to one whose abdomen is of an orange yellow throughout its whole length; hence those who have bred for beauty as well as other qualities have been able to succeed in producing queens that will give all yellow queens every time, and whose worker progeny are a solid yellow nearly its whole length. Those who have paid no attention to color breeding have seen their bees go from those with three yellow bands back to bees with scarcely a bit of yellow on them; and yet there is scarcely a number of a bee-paper printed but that tells somewhere in its columns about "pure" Italian bees. If the Italian bees are a *pure* race they are given to sporting beyond any other known pure thing. It seems to me it is impossible for these bees to be any thing else than a hybrid. This inclination to sport as to color gave the assurance that they would sport as to quality as well, so we have breeders who have worked for a very industrious bee, and have seen industry come to the front with them. Others have worked for wintering qualities, white capping of the combs, etc., and seen these qualities increase; till, take it all in all, the Italian bee, as bred in the United States, undoubtedly stands at the head of all the bees known to the world. This is evidenced by calls coming for them from all parts of the world; and could they be shipped the same as can non-perishable articles, there would not be a country on the face of the earth, where bees

could exist, where they would not be found. Now, the same thing which keeps the black bees from sporting as to color, hinders them from sporting in other directions desired by the bee-keeper, so that, to a certain extent, they are nearly if not identically the same as they were when they first left the hands of the Creator. There is a certain amount of improvement by the "survival of the fittest," and yet such improvement has not advanced these bees as much during the centuries which have passed as has the hand of man the Italians during the past quarter of a century; nor has the hand of man ever made as much improvement on them during all the long past as has been made with the Italian during the last decade.

There is one other thing which I wish to notice in the correspondent's question before closing. He wishes to know whether the black queens would not be "larger" and "finer" had the right course of breeding been pursued. All of my experience goes to prove that an exceedingly large queen is rarely if ever as good as one of a medium size; and if it is meant that a large queen is "finer" than is one not so large, I beg to differ with the writer of the question. A large queen seems to be less active than a medium-sized queen, and, so far as my experience goes, they can not be depended upon to bring the colony up to the greatest strength at the pleasure of the apiarist so well as can queens of lesser size. It would seem by the complaints which come to almost all queen-breeders, saying, "The queen you sent me is small," that, if queens sent out could be as big as bumble-bees, the purchaser would be far better pleased than he is with a queen which is capable of *great* things, but small to look at when she arrives at his postoffice. The old saying, that "you can not tell by the looks of a toad how far it can jump," applies more fully to a queen-bee than to any thing else with which I am acquainted, especially to a queen which has come a long distance in the mails. I have seen queens which came a long journey in the mails, which did not look nearly so well nor as much like a fertile queen, as did virgin queens which I had in my yard at the time; but give them a few weeks in a colony during the month of May and they would not look like the same queen, and could do a business at egg-laying which was a marvel to the most fastidious. The queen that is capable of producing the desired number of worker bees in just the right time for the honey-harvest, and these workers have the desired energy in securing the harvest (all minor qualities being equal), is the queen which will give the best results, be she large or small; but the real moneyed result will generally go with the queen of medium size, for she is the most apt to give the bees as above.

Borodino, N. Y., Aug. 4. G. M. DOOLITTLE.

[Friend D., you may be right in the above, and you may be wrong, so far as I know, for I confess it is deep water for me. I do know, however, that *some* of our plants and vegetables are capable of very great changes, and in a very few years, by careful selection. Out in our garden, right before me, is a great whopping—well, I can't tell you its name, for the plant has evidently not yet decided whether it will be a cabbage or a cauliflower. There is a great mass of leaves inclosing something. The shape of the leaves indicates that it is a cauliflower; but at present it looks as if these leaves contained only a good-sized cabbage-head. Our readers may remember my White Plume lettuce. A single stalk of lettuce in the greenhouse came up looking white. I at first thought it was caused by feeble growth and lack of sunshine, etc., and therefore I hadn't much faith

that it would perpetuate its bleached appearance. By much pains and care, however, I succeeded in getting it through the winter, and making it bear seed, and the little plants were more or less white. By selection we got heads of lettuce that were like some of our coleuses, mostly white, with green splotches; but when we tried to sell them on the wagon we were rewarded for our pains by having customers object, fearing that the bleached appearance was caused by something we put on it to *kill insects*. Well, we should have succeeded in getting it all white, no doubt; but by that development of its albino peculiarity the plant became enfeebled, and I soon found that we must work for good solid heads as well as for whiteness. Old dame Nature seemed quite willing to give us one or the other, but I have about given up trying to get both. The white plants do not make good heads, but just push up to seed. If I were to attempt to reason by analogy, and say that the albino bees will be feeble and "run up to seed," I should probably be jumping at conclusions. I wish Prof. Cook would tell us what he thinks about it.] A. I. R.

KING-BIRDS.

THEIR HABITS; AN ENEMY OF BEES.

Editor Gleanings:—The question of the king-bird and its habits as discussed in GLEANINGS at different times has not thrown much light on the habits of that bird; and from what has been said by correspondents in that journal from time to time, it is apparent that some have mistaken other birds for the king-bird. That such a mistake should be made is not so

given resembles the bird commonly called "phoebe" nearer than it does the king-bird. I send you drawings, both of the male and female, which are more true to life.

The king-bird in this latitude (42) brings forth its brood toward the last of June or the first of July, usually from three to six in a litter. It builds a substantial nest of rather coarse material, most often in the forks of large limbs of a tree, and close up to the tree-trunk, without any perceptible attempt to screen it from rain or sunshine. When situated near an apiary, the food of the young king-birds, at least while they remain in the nest, is mostly bees and usually drones. Five young king-birds were taken from their nest at sunset, and dissected. Upward of forty bees, mostly drones, were found in the gizzards of the five. Please note, not in the crop, but in the gizzard; for king-birds have no crops. The fact that they have no crop, and that the oesophagus does not appear to be larger than an ordinary shoe-string, certainly not capable of expanding much more than to accommodate itself to the size of a large drone, should be sufficient proof to contradict any statement to the effect that they are capable of regurgitating their food in quantities described in the A B C of Bee Culture.

DOES THE HONEY-BEE RECOGNIZE THE KING-BIRD AS ITS NATURAL ENEMY?

Circumstances seem to indicate that they consensually so understand it, and are ever ready to punish it whenever they have an op-



KING-BIRD, FEMALE.

KING-BIRD, MALE; $\frac{2}{3}$ NATURAL SIZE.

very strange when we consider how little well-informed people on other subjects know of ornithology, and, worse than that, those who attempt to write on any of the different species of birds are usually very careless or else ignorant in regard to the subject. Our cyclopedias and natural histories are also faulty in this respect, and more on account of poor illustrations than from detailed description. The American Cyclopaedia describes the king-bird quite accurately in respect to its size, color, and markings; but the cut of the bird as there

portunity to do so. Only a few years ago two men were preparing to hive a swarm of Italian bees which had just issued from a hive; and while waiting for them to cluster, their attention was called to two king-birds whose actions indicated that they were in a panic of alarm and perfect fury. Their continual screams seemed to voice both feelings of despair and rage. They would dive out of their hiding-place right into the cloud of circling bees, screaming, and snapping their bills, then suddenly dart back to their cover of thick brush, followed by a perfect stream of bees. While this battle was going on, three full-fledged young king-birds fell to the ground, and died from the effect of stings. The parent birds, which had so heroically tried to defend their brood, were never seen afterward, probably having also died from stings.

The love of the king-bird for drones affords a

sufficient excuse for all bee-men to make war upon him, even if it did not touch the worker, for it could easily mistake a queen for a drone; then, too, the cumbersome flight of the queen and drone when united in the air would be a very tempting morsel for a bird that loves to take its prey on the wing. J. W. PORTER.

Ponca, Neb., June 30.

NUBBINS.

THE AGRICULTURAL COLLEGE AT LANSING PRO-
NOUNCES SPECIAL PLANTING FOR BEES
ONLY, NOT A SUCCESS.

This is proving our third poor honey season. Every person says, "What delightful weather!" People who have gone north are hastening back, or sending for cloaks and overcoats. Is there any connection between the cool weather and the small honey-flow?

The matter of "honey-dew" is one of national importance. I am getting scores of letters, asking, "Why is our honey so dark, so strong, and what can we do with it?" It should have been kept from the sections. It can be used for manufacturing—for cakes, cigars, and printers' rollers. May be it will be safe for winter. It surely will do for spring food for the bees. What does friend Muth say on the matter?

I think our experiments have shown that special planting for bees is not advisable. If a plant can be found that will surely grow, will secrete nectar in all weather, will self-sow, and hold its own against weeds, etc., and needs no cultivation, such a plant might pay just for honey? Is there such a plant?

We have tried experiments this season that show most conclusively that bees are a blessing to the farmer and fruit-grower. These latter should either keep bees or else beg the bee-keeper to come. I am sure all will be interested in experiments that prove beyond peradventure that bees are very essential in nature's economy. Agricultural College, Mich. A. J. COOK.

SHUCKS.

Bro. Root:—I see you always have "Straws" to go with your "Heads of Grain," so I concluded to bring you an armload of shucks to be fed to your readers, along with the "Nubbins" furnished by Prof. Cook.

I've been thinking what a grand scheme it would be to get a queen each from friends Nebel and Moore, and raise a strain of bees that would "root over the flowers," spill their contents, and just "roll in the honey" like a little boy gathering pumpkins. This scheme is not patented.

Dr. Miller can have nice nail-boxes cheaper than he makes, by getting a restaurant-keeper to open some square oyster-cans, according to the constitution and by-laws stamped on the thin-tinned end. Cut them down the side a piece, take part of one side off, punch a hole in the long side to hang up by. What better could one ask? Neat, light, cheap and durable. I never lost any sleep "hatching" this invention, doctor, so it is free.

SNAKEY.

Yes, I too have seen prairie rattlesnakes swallow as many as seven young ones "way down," but they did not "give them up in the dying act," as friend LaMontagne says. The one with seven didn't give 'em up till our old dog shook her in two. Those little fellows were old enough to fight. But a copperhead is old enough to fight before leaving the eggs. I saw

a man once who thought his boots were "too snakey" and wouldn't have them on.

PAINTED APICULTURE.

I think Dr. Miller put in some hard licks in the right place in speaking about the "rosy hues." It seems, from all appearance, that honey-producing will soon be as badly overdone as the queen-rearing business now is. From the number of advertisers catching on every issue of GLEANINGS, it looks as if every breeder would soon have to be his own customer.

Carbondale, Kan.

J. H. MARKLEY.

THE SILK-MOTH.

ITS CARE AND CULTURE.

While there are several larvæ of moths that spin good and abundant silk, there are none that equal the mulberry silkworm, or the Chinese silk-moth, *Bombyx mori*. This insect has been cared for so long that it has become feeble, pale, and nearly helpless, so that, should man fail to care for this valuable insect for a single year, the species would become extinct.

The moth is white or cream-colored, with obscure brownish stripes across the front or primary wings. The moths are about the size of our common cabbage butterflies, though, of course, the body is much heavier. Curiously enough, neither sex can fly, though the male is the more active of the two. We see here how too much care and fondling tends to weaken. It is not the boys or girls whose parents do every thing for them that set the river on fire. The insects mate very soon after they come from the chrysalis state, and the female commences almost at once to lay her 300 eggs. Strangely enough, the female will lay, even though coitus does not take place. What is still more strange, these unimpregnated eggs sometimes develop. Thus we have here what we see in aphides and our drone bees—parthenogenesis, or agamic reproduction—reproduction without males. The eggs are glued fast to whatever receives them. It is common to place thick paper by the insects to receive the eggs. The moths lay these eggs in late summer, and soon die. The eggs hatch the next spring or summer. The form of the egg is nearly spherical, slightly flattened. It is small and yellowish; an ounce of eggs will produce 40,000 worms. The eggs are lighter colored just before hatching. The larva is also whitish, rather rough, with a caudal horn, like our tomato-worm and other sphinx larvæ. When small it is quite hairy; but as it becomes full grown, the hairs are lost. When mature it is nearly two inches long. It feeds on mulberry or osage orange. It is an enormous feeder, as any one knows who has raised it. It is said to eat its own weight of leaves each day. This may not be correct, but it is not very far out of the way. It is no slight task to care for a large number. The larvæ are usually kept in trays, and the feed must be kept fresh and clean or disease will destroy all the insects. The larvæ are also helpless. If put out on to the trees, they are blown off and destroyed. Like the moth, long care and dependence has made that care necessary to life itself. The larva feeds for nearly a month, when it spins its cocoon, which is egg-shaped, as large as a small hen's-egg, and may be white or yellow. The worm is about three days spinning its cocoon; then it rests three days, when it pupates. It remains as a pupa for three weeks, when the moths come forth. If the eggs are not desired, the cocoons are heated, so as to destroy the pupa. It is easier to wind the silk off from such baked cocoons; for if the moth

comes forth, she breaks the thread, which is spun as one continuous fiber. If the eggs are wished, the moths are suffered to come forth, mate, and deposit their eggs on the heavy paper on which they are placed.

Of course, it is interesting to care for a few of these insects; but the labor is quite severe, and the returns quite slight. Labor in Europe is so much less than here that it is to be doubted whether this industry will ever give satisfaction. There are quite large establishments, I think, in Kansas and California. My experience with silkworms has been only that of an amateur. Will not some experienced reader of GLEANINGS correct my statements if necessary, and add further points? A. J. Cook.

Ag'l College, Mich., June 17.

RAMBLE NO. 43.

WAXWORKS OF ECKERMANN & WILL; A VALUABLE AND INTERESTING ARTICLE.

Having for several years sent our surplus wax, whenever we had any, to the firm of Eck-

ing candles and working with wax upon a common kitchen-stove. From this humble beginning the business has grown to its present proportions, which employs about 70 persons, male and female, and who yearly transform thousands of tons of crude wax into the many beautiful things into which wax can be worked. In the basement of the factory we find crude wax from all parts of the world, and the qualities are as various as the countries from which it comes. This variety in quality is derived, it is supposed, from the different flora from which the honey is obtained. The wax from Cuba is of a cherry red, while from the adjacent island of St. Domingo the color and quality are entirely different.

Imported wax comes in various stages of dirt, and requires much cleansing before it is fit for use. Wax from Africa is shipped in large 300-lb. cakes, covered with sackings, and contains much foreign substance. American wax is shipped in barrels and boxes, in the well-known tin-pan shapes. The firm gives North Carolina the banner for producing the best quality of wax in this country.

The receipts of American wax have fallen off



FACTORY AND BLEACHING-YARD OF ECKERMANN & WILL, SYRACUSE, N. Y.

ermann & Will, of Syracuse, N. Y., and receiving prompt returns and the highest market prices, we desired a further acquaintance with them; and as we rambled through the city of Syracuse the opportunity was embraced of looking their works over, and with the following result.

The waxworks of Eckermann & Will were established in 1855. Mr. Anthony Will was a practical wax-worker from Germany, and, soon after settling in Syracuse, he commenced mak-

ing to a certain extent during the past few years; but foreign wax has steadily increased, and especially since the enactment of the new tariff law, which allows wax to come in free.

As foreign wax is taking the place of native wax to a certain extent in the manufacture of foundation, Messrs. Eckermann & Will find that a little educational process is required to teach foundation-makers the difference between native and foreign wax. Parties who have ordered wax from them have been dissat-

ished with quality and color, and immediately jump to the conclusion that it is adulterated. The name of the firm has certainly been long enough before the public to give assurance that the wax, or whatever else that may be ordered from them, is true to name and description; and if the firm had conducted its business on the plan of deception they never would have grown up to their present prosperous proportions.

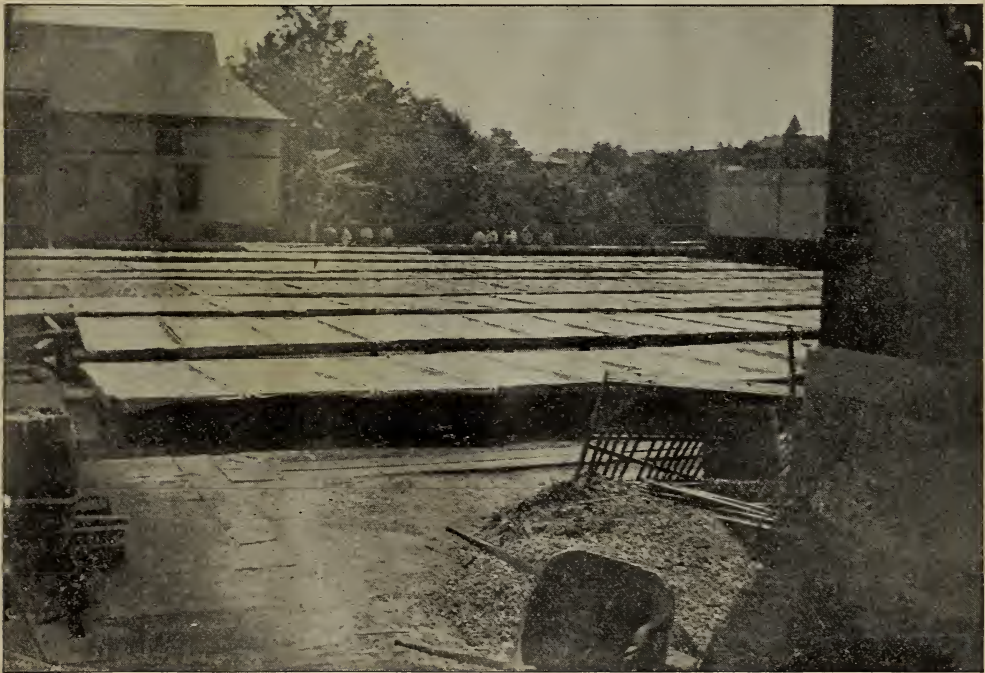
The wax is melted by steam in large wooden tanks, with a capacity of 1000 lbs. It is reduced to thin sheets in another long tank, in the end of which is a revolving cylinder about 2 feet in diameter. After sheeting, it is spread out upon canvas trays for bleaching. The yard in the rear of the factory will contain 10,000 lbs. of wax, and that amount was going through the interesting course of bleaching at the moment of our view, which is here reproduced.

When the wax is first put out it compacts more or less; and during the first processes it has to be frequently showered with water, and

process, but the greater portion of them are made in molds, in which hundreds can be made in a short time, and which have a very ingenious self-wicking attachment.

At present the firm are making large candles. A 15-lb. candle was too much of a temptation for our Hawkeye to pass by, and we here give the appearance of it by the side of a workman. The largest candle made by them weighed 75 lbs. These large candles are made for merchants. The latest popular advertising fad is to set up one of these mammoth candles in a store, touch a match to the wick, and let people guess how long it will burn. Of course, the one guessing nearest will get a suit of clothes, a piano, or a building lot, and the merchant get a power of advertising. Another important branch of manufacture is a refined article for the drug trade. This is put up in small fancy cakes, and sent to all parts of the country.

A majority of the workmen are Germans. The leading industry of Bavaria has for years been the making of church candles, and their product is the best in the world; but from the



ANOTHER VIEW OF THE BLEACHING-YARD.

worked over by hand to keep it in a loose and arable condition. As the process draws toward completion it is then shielded from wet or rain by being placed under protecting sheds if a shower should rise. The bleaching process also develops other features in foreign wax. Some will not bleach at all. When the bleaching process is finished on good wax it has a pearly whiteness good to look upon. After bleaching, colors are incorporated in the wax, and the artist in wax has a wide field to exercise his artistic taste. Church, fancy, and toy candles are made in large numbers in all shades and colors, and in all stages of decoration. Some candles are made after the old dipping

number and variety in this manufactory we think Bavaria has a worthy representative in Syracuse. A cheaper grade of candles is also made of paraffine and stearine. Ceresin is also used. This latter product comes from Silesia, Austria, and is almost like wax, but it eventually hardens and becomes tough like rubber.

The firm have never manufactured foundation, except in an experimental way. The experiment was not a success; and from points we have learned since visiting the factory, we think the result of further dealings in the aforesaid line will result only in money out of their own pockets.

The founders of this establishment have gone

the way of all living; but the younger Wills continue the business under the old firm name; and from the honorable and enterprising way it is conducted, we expect to see the business still further develop.

Syracuse is one of those energetic cities of Central New York supported by a fertile farming country. Its leading industry is the manufacture of salt, from the abundant saline springs there found.



A MAMMOTH CANDLE.

There are many bee-keepers located in this vicinity, and their wants in the supply line are attended to by F. A. Salisbury, who not only manufactures but handles supplies for other parties. Winter losses were heavy in this portion of New York, and Bro. S.'s outlook and his feelings seemed to be lacerated thereby, and electricity had greater charms for him than the keeping of bees. We tried to give him the California fever in order to give Dr. Merchant another patient; but we fear the doctor will not get a fee from Mr. S. To encourage the doctor, several cases will soon be handed over to him by the

RAMBLER.

[You have indeed given us a valuable article; and this, together with your Hawkeye views, gives us a glimpse of the extent to which one of the products of the apiary (wax) is used in the arts outside of its use by bee-keepers in the form of foundation. I venture to suggest that very few bee-keepers who have sent Eckermann & Will wax have before realized the magnitude of their business. It might be interesting to know what proportion wax sold for foundation in their business bears to that used in other lines. Perhaps the company or the Rambler can favor us with the information. As bee-keepers use very little if any bleached wax for foundation-making, we must infer that the product of the large bleaching yard shown in the two views, of a capacity of 10,000 lbs. at a time, is used wholly for other purposes. Say, Rambler, why didn't you tell us more about the bleaching—how it is done in detail, and what it is for? The three views are exceedingly interesting, and stimulate a desire for more facts. Is that big candle held by the workman supposed to be made entirely of wax, or is the candle

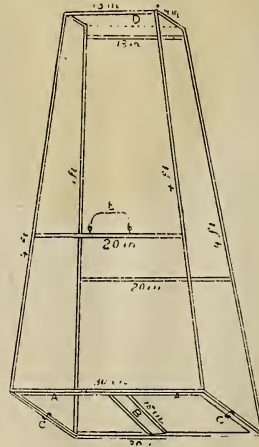
better for the mixture of some grease or paraffine? Wouldn't pure beeswax at 26 or 27 cents wholesale be rather expensive for those big candles, or in the small candles used in the Catholic churches? By the way, it has been intimated in a quiet way that Eckermann & Will have sometimes sent out adulterated wax to foundation-makers. Of the many tons of wax that we have bought of them we never had any but the pure article, and we have no evidence of their furnishing it to other makers. Indeed, it would be very poor policy, for "doctored" wax for foundation can be so readily detected. They may mix other ingredients in wax used for other purposes, and this would be perfectly legitimate, so long as the foreign addition did not deteriorate the wax. In fact, we suspect, for instance, that candles made of pure beeswax are not so good as those made of adulterated wax. When adulteration improves an article, and consumers understand the fact (mark this), then adulteration is perfectly legitimate.]

E. R.

MRS. GOLDEN'S SWARM-CATCHER.

HOW TO CATCH A SWARM BEFORE IT GETS INTO THE AIR.

I inclose a photograph of Mrs. M. A. Golden's swarm-catching device. It may an old idea, used years ago, for all we know; but, nevertheless, it is one of the best, handiest, and most complete arrangements for catching swarms when issuing from the hive that we have ever used. The cut will explain the whole matter better than words can, and is very easily constructed.



MRS. GOLDEN'S SWARM-CATCHER.

My good wife is the author, and suggested the above device, which I hastily constructed. You see I caught her using it in a few minutes after completing the catcher; thus she has caught some 18 or 20 swarms with it, and the queen every time. You see there is no fussing or catching from trees, and running through the hot sun; but simply, when a swarm is issuing, pick up the device and hold it against the entrance, and behold with considerable pleasure that no tree is to be climbed or stings to be induced.

To construct the catcher, take 4 strips of pine 4 feet long, $\frac{3}{8}$ in. square; 2 strips 30 in. long by $\frac{3}{4}$ square; 2 strips 15 in. long by $\frac{3}{4}$ square; 2 strips 20 in. long, $\frac{3}{4}$ square; 2 strips

13 in. long, $\frac{3}{4}$ square; 2 strips 4 in. long, $\frac{3}{4}$ square; one strip 15 in. long, $\frac{1}{2}$ x 3 wide, nailed together as per diagram, and covered with cotton cloth, but light oil cloth is much the best, with the gloss side in; 2 light sash. A. covered with wire cloth, are slipped into a groove at B, and fastened by a spring C. A flap of cloth is tacked to the upper slide at D, and when the catcher is moved it falls over the entrance and keeps the bees from getting out. When the swarm has issued, take hold of the wire bale at E, and go to your hive and sprinkle the bees through the wire cloth; then turn the catcher with wire screen down, and a shake places the

bees on the screen spring; the screen at C which comes out, and the bees, are shaken off and harmony reigns supremely. Any one using the above catcher, old or modern, will be blessed with a mild temper in swarming time.

J. A. GOLDEN.

Reinersville, O., June 25.

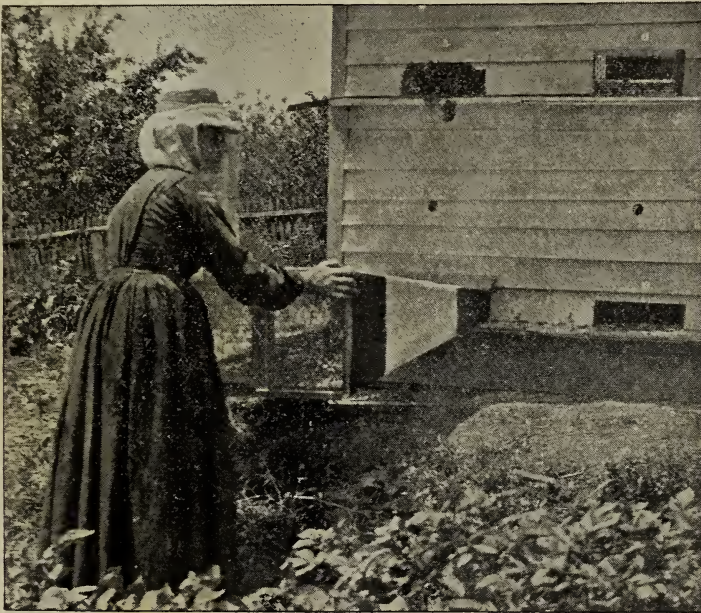
[These devices will doubtless work very nicely if you can get to a hive just as the first bee of the swarm are coming forth; but in most cases a swarm is entirely or nearly out and in the air before they are observed. There are cases when these hivers would be very useful: During the height of the honey season, swarming-out is contagious; and while one swarm is in the air, another, hearing the swarming-note, is very apt to come forth. By keeping up a careful watch at such times these swarms can be trapped, and so prevent them from uniting with the one already in the air; but the apiarist must be spry.

We have engraved in half-tone the photograph of Mrs. Golden hiving the swarm, so that our readers can witness an actual case.

I am unable to say whether Mrs. Golden was the first one to conceive the idea. Mr. B. Tay-

lor, of Forestville, Minn., used a similar device last year. Of its practical workings in a letter received he says:

Friend Root:—I send you to-day photos of two swarm-catchers invented by myself. I used one of them last season; and I will say that it does the work with absolute perfection. One person can adjust it to the hive instantly, without killing a bee, and it will be tight whether tilted much or little. The self-hiver is equally perfect, and offers no obstruction of any kind to the bees while at work. I took all these things to the Keokuk convention, with the intention



MRS. GOLDEN'S SWARMER CATCHING A SWARM.

of giving them to the bee-keeping friends, but I was met in a different spirit from what I expected, and had no chance to offer them.

B. TAYLOR.

Forestville, Minn., May 14.

It is quite possible that these devices may be very serviceable in a good many instances. We should be glad to get reports from others who have used them. By the way, there ought to be a good many who have tested the Alley automatic swarmer. How has it worked?

E. R. R.

RIPENING SAGE HONEY ARTIFICIALLY.

QUESTIONS FROM A CALIFORNIAN ANSWERED BY A CALIFORNIAN.

In our locality—Coast Mountains—the sage honey is too thick to allow it to ripen in the comb. We use a tank of 3000 to 4000 lbs. capacity. The greatest heat is about 115° in the shade.

1. Do you advise setting the tank in the shade or in the sun?

2. What is the greatest heat that honey will ripen in without injury?

Last, Cal. GILSTRAP & GILSTRAP.

[We sent the above to Mr. J. F. McIntyre, who replies:]

1. You may set the tank in the sun if you cover it with white muslin, and do not let it stand over two weeks; 115° in the shade means 135° in the sun, in California, where the air can circulate; but in a hole or tank, the air gets much hotter. I once spoiled half a tank of honey by covering it with wire cloth, and letting it sit in the sun about a week. My neighbor had a hen lay in a nail-keg which stood out in the sun during a hot day, and in the evening the egg was cooked. Myself and neighbors all set our tanks in the sun; but I intend to put a shed over mine this spring.

2. I have never made any careful tests, but I have reason to believe that honey will stand a higher temperature if heated with hot water or steam than it will if heated in the sun. I believe that the strong light has some effect on the honey to make it darker, and that honey allowed to stand in the sun soon acquires an old strong flavor—becomes rancid, as it were. I have frequently heated honey to 160 or 170° by setting the can in hot water, without injury; but I am sure that that amount of sun heat would spoil the honey. I have great faith in a "vacuum pan" for evaporating honey; and if I knew where to get an air-pump of half horsepower capacity I would build one and try it.

Fillmore, Cal., Apr. 7. J. F. MCINTYRE.

FRAMES.

DR. MILLER DISCUSSES THE HOFFMAN FRAME.

Isn't it time we were having reports coming in from different quarters as to success and failure with different kinds of frames? For after all the discussion it is hardly possible that there has not been considerable experimenting. Come on, friends, and tell us how you came out: give us your successes and failures, especially the failures.

It is hard to be fully settled, but I'll tell you about my experiments, as far as I've got. That feature of the Hoffman frame that allows the ends of the top-bars, and the upper ends of the end-bars, to come together in such a way that the bees can get at the rabbets only from below to propolize them, I am much pleased with, and think whatever else may be about the frame, one feature must be, that the ends of the top-bars must be wide enough to touch. The great advantage is, that you can slide several or all the frames along together.

But the thickness of the Hoffman top-bars that I have had is $\frac{3}{8}$ inch, and I am not satisfied with that. There are decidedly too many bur-combs over them, and the top-bars of $\frac{3}{8}$ inch thickness are just as clear, so far as I can judge, as the slat honey-board. Possibly as they become older they may not work so well, but that does not alter the fact that $\frac{3}{8}$ is ahead. It may be that one inch might be still better, but if $\frac{3}{8}$ always works as well as it has done so far, I think I shall be as well satisfied as I am likely to be with any thing in bee-keeping.

Some top-bars have mortises cut in them for tenons on the ends of the end-bars. That makes a nice fit, but it weakens the top-bar at that point, making it liable to split off. Decidedly, no mortises for me.

So much for top-bars. As for end-bars, I don't know enough about it yet to know whether the Hoffman is all right, or whether end-bars closed their entire length are better. To tell

the plain truth, I don't know yet just how to handle either. If, in putting one frame against another, it is first to be rested on the rabbet and then slid along, then the less of the end-bars to touch each other, the less danger of mashing bees. But if the lower end of the frame in the hands is first to be placed against the upper end of the next frame and then to be slid down, then there is no more danger of killing bees if the end-bars touch their entire length. Still, even in that case, the shorter the part of the end-bar that touches, the quicker it can be slid down. So far, then, the advantage is on the side of having the end-bars touch only at the upper ends. But another thing comes in. If the end-bars touch their entire length, we have the closeness of the box hive, and it may be that this is so important, especially at the North, as to overbalance the disadvantage in handling. Who can help to settle this?

So far, then, as I can see, the frame I want is the Hoffman having a top-bar not less than $\frac{3}{8}$ inch thick and a little more than an inch wide, having end-bars possibly touching the entire length, possibly only part way.

As to one point in using these frames, I am still in the dark. In using loose hanging frames, suppose the top-bars are one inch wide, and they are spaced 1 inch from center to center. That will leave $\frac{3}{8}$ inch space between the top-bars. I believe it is the general custom to leave the same $\frac{3}{8}$ inch space between the outside top-bar and the side of the hive. Now, in the hives that I got with Hoffman frames, there was no provision for any thing else than to have the top-bars fit snug up against the side of the hive, for of course if every thing is not wedged up tight together we have no fixed distances. By the way, there was nothing provided to wedge up with. Well, when the loose frames with inch-wide top-bars have $\frac{3}{8}$ inch between the top-bar and hive wall, if the comb is $\frac{3}{8}$ inch thick there is $\frac{1}{16}$ of an inch between the face of the comb and the hive wall. But if a Hoffman top-bar is $1\frac{1}{8}$ inch wide, if it is shoved up tight to the wall, there is just a quarter of an inch between the face of the comb and the hive wall. Will that do? In a hive with Van Deusen spacers I let one frame fit snugly against the side of the hive, and that side of the frame had cells so shallow that no brood could be in it. Did it only happen in that case, or would it always be so? If the frame must be spaced out further from the hive, how should it be done? I have nailed on little pieces on the side of the hive, but I don't entirely like that, for I don't like any thing that makes one side of the hive different from the other. I'd like to know how to fill up the other side of the hive, also how to wedge up the dummy, etc.

C. C. MILLER.

Marengo, Ill.

[Yes, doctor, it is time we were having reports as to the success or failure of the different kinds of frames, and I am glad you have started the ball rolling. If some frames are great labor-savers, and others are not, those of us who are earning or trying to earn our bread and butter off the bees want to know what frame or frames it is.

The Hoffman top-bar, with its widened ends, is good, and I think the majority of those who give it an unbiased test will so agree. There may be some difference of opinion regarding the end-bar, but I think that, if we accept his top-bar, we all sooner or later will adopt the end-bar substantially as Mr. Hoffman himself prefers it. Mr. H. uses a deep frame, and hence the widened part of the ends does not need to extend down more than $1\frac{1}{2}$ inches on the L. frame. It's my opinion, that the less that

comes in contact, and yet is sufficient to keep the bottom-bars correctly spaced, the better. One and a half inches, I think, will be enough. Another thing: Hoffman's idea of having the parts of the end-bar V-shaped—i. e., one square shoulder against a sharp edge—is something we must have. At first I thought we could dispense with it, but now I see its importance; but, more anon on this point, when I will illustrate the reason, with diagrams.

The Hoffman frames, to be handled the most expeditiously, should be set down in the rabbet and then slid along; hence I do not want too much depth to the wide part of the end-bar; because, the greater the depth, the more liability to kill bees. You can have closed ends with Hoffman top-bars, but the sliding function is then sacrificed; that is, the sliding of the frames in the rabbets. Without this, rapid handling is greatly hindered, because we wish to avoid killing bees.

There should have been with your hives small strips of wood about 3 inches long, $\frac{3}{4}$ wide, and $\frac{1}{4}$ thick. These are to be nailed to the inside of the hives in such position that, when the frames are crowded up, there will be the usual distance between the comb and the side of the hive that there is between the combs. But, after all, we have left them off in actual practice in our Shane yard. I am not sure it is necessary to wedge Hoffman frames.] E. R.

LADIES' CONVERSAZIONE.

NOT GLOVES, BUT OIL OF WINTERGREEN FOR THE HANDS.

A SUGGESTION FROM A DOCTOR IN AUSTRALIA.

Dear Sir:—The May numbers of GLEANINGS arrived a few days ago, and I see that the writers in the Ladies' Conversazione are much exercised in their minds on the subject of gloves for apary work, and all sorts of materials are recommended, from pigs'-skin to sheep's-wool. Gloves are no doubt of use to keep the hands clean and soft; but I want to tell the ladies that, so far as stings are concerned, they can do without any covering for the hands. Just let them get some oil of wintergreen and rub a few drops of it over their hands; and if they can get a bee to sting, unless it is hurt, they are cleverer than I am.

It is now mid-winter here. The day is dull and threatening rain, but the temperature is not low enough to keep bees indoors; the day, however, is of the kind on which they are usually cross; but just now I went out, and, after putting on a veil and rubbing my hands with oil of wintergreen, I removed the cover of a hive and stripped off the mat, which was stuck down with propolis. The bees came at me in fine style, and dozens of them struck my hands; but as a rule they went off at once. Some remained, and curved their bodies around so that it took some strength of mind to prevent me from knocking them off; but they always thought better of it before the sting went in. I then jarred the hive and jerked my hands over the frames; but, though numbers of bees struck my hands, I was quite unable to get one to sting. I repeated this with two other hives, with similar results.

I know that the use of oil of wintergreen in this way is not new; and Mr. Cheshire, in his "Bees and Bee-keeping," Vol. II., describes some experiments similar to the above which he and Mr. Simmins conducted; but they do

not seem to have taken root, and I notice that, in your review of Cheshire's work, you do not mention it. I feel convinced, however, that, were the fact more generally known, gloves for handling bees would soon become things of the past.

The smell of oil of wintergreen is not disagreeable, and it does not soil the hands. It is, moreover, easily washed off afterward. Cheshire says that, in England, it is often adulterated, and it is here also; but, of course, I know that they wouldn't do any thing like that in America. They might, though, in Canada.

H. MILLER, M. D.

Warrnambool, Victoria, Australia, June 29.

[Is not oil of wintergreen the chief ingredient of apifuge, a substance that is sold in England as a preventive of bee-stings when smeared over the hands? The stuff did not prevent the bees from stinging our hands, although it did seem to make them hesitate a little. We accept the very fine compliment you pay us Americans. We wish we deserved it.] E. R.

BEEES KILLED BY CLOSED-END FRAMES.

MISS WILSON DISCUSSES THE MATTER.

We read a great deal about the closed-end frames being troublesome in killing bees; but I don't think they can compare with brace and burr combs, and the honey-boards as bee-killers. It would be a great saving of time and bees if we could manage to get along without those three articles. I would not object so much to the honey-board, providing the space between the top-bars and honey-board were not filled with burr-combs and honey. But if your colonies are strong, that is almost always the condition of affairs. Just go to a good strong colony, pry up your honey-board, and you have a sticky, dauby mess. Then pry your frames apart, and the brace-combs are just as bad. In handling your frames, unless you are very careful the honey is dripping all over your clothes. Now try to replace your frames and honey-board without killing bees. The bees will stick to the honey as if they were glued there, and it will take a good deal of patience and smoke if you do not kill any, to say nothing of time.

The bees will be very thick, both on your honey-board and top-bars. You can dislodge them from your honey-board by giving it a vigorous shaking, or you can take your honey-board in one hand, and, with your other hand, pound on the hand holding the honey-board; that will jar them off quickly. But you can't shake or jar your top-bars. Nothing but smoke will do any good, and I am not always able to get them out of the way with that, and I use it pretty freely too. I truly believe I kill more bees in this way than any other. Thick top-bars are a great improvement. While they have not been entirely free from brace and burr combs, they have been nearly so. The fact that they are new may have had something to do with it, and they may not work so well when older. But, even if necessary to use honey-boards, with them I should still want thick top-bars to lessen the dauby mess over the top-bars.

Our bees have seemed possessed this year to build brace and burr combs. I don't think we were ever so much troubled with them before. They have built them between supers of sections, on separators—in fact, almost everywhere it was possible to find a place for them. We carefully scraped them off separators and sections each time the supers were moved, and usually found them as good as ever next time the supers were looked at.

Of late, in putting on our supers we have written a memorandum on the top of one of the sections, to keep track of the work of the colony. For example, suppose on the 10th of July we give No. 12 the third super. We write on the top of one of the middle sections, "12, July 10, 3d." It has been a great help, as we can tell thereby what the colony has done, and how much more room it is likely to need, even supposing all the supers but one have been filled and taken off. Before, we had bothered about telling how much room to give. Suppose we come to No. 3. It has a super lacking a pound or two of being full. Now, if this is the second or third super it has filled, it ought to have more room; but if it has been all summer filling this one, it will do very well as it is. By our memorandum we can readily tell how much it has done, and act accordingly.

Marengo, Ill.

EMMA WILSON.

[So you have really discovered that keeping a memorandum on top of a section in the hive is less trouble than lugging around a great book. I am glad to hear of it. But, now, why not have a slate on top of the hive, or hanging on the hive, instead of being obliged to raise the cover, and then make a section unsalable by unsightly figuring? Stay a little. Perhaps I am in haste in my remarks about "unsightly figuring." If it were done by a feminine hand it might make a difference; but who wants pencil-marks on a section of honey? If the pencil were very sharp, and the writing small, with fine lines, it might not be so bad, and I should say it is most assuredly a short cut. Other bee-keepers have found it out, for I have repeatedly seen memoranda written with pencil on different parts of the hive when visiting bee-keepers. Sometimes the memoranda are so voluminous as to cover considerable space. Your suggestion in noting down the rate a colony has been bringing in honey is certainly a big advantage. I have seen expensive blunders made in just the way you mention in your concluding sentence.]

A. I. R.

[You have given a true picture of the nuisance of burr-combs between honey-boards and the old-fashioned thin top-bars; and it begins to seem that bee-keepers all over the land are coming to the same conclusion. The slatted honey-board scarcely sells now at all as an article of hive furniture, at the Home of the Honey-bees; and we are informed that another large supply establishment is about to throw it out of their price list. The reason is not given, but presumably the sales had gone down so low it did not pay to advertise it any longer. A year ago this month we had only recently purchased our Shane yard. The colonies to the number of about 80 were on loose thin top-bar frames, honey-boards on top. We had a large order to fill from this yard, which required opening about half of the colonies. Honey stopped coming in, and our boys had actually to give up work on account of the tearing loose of the burr-combs, and the consequent dripping of honey and the inevitable result of robbers and cross bees. The next day we sent down a force of three men, and even then they had their match. The apiary is now all on Hoffman frames, with thick top-bars. There are no burr-combs on any of the 80 colonies, except between two stories of one strong colony; and in this the foundation had got loose so as to bulge into the next frame. The reason was apparent. Well, what a contrast now! We can open or handle any colony, with the exception of the one noted, without breaking a single burr-comb. We sometimes sever a few brace-combs (spurs of wax between the frames), but aside from this there is not a drop of honey

that comes from broken combs. You say thick top-bars are a great improvement. Just so; but if you had a bee-space reduced to a scant quarter of an inch, I feel pretty sure you would not find a single burr-comb. The hives you use provide for a $\frac{3}{8}$ bee-space, if I am correct.]

E. R.

OUR QUESTION-BOX,

With Replies from our best Authorities on Bees.

QUESTION 191. *I am a beginner. Will it pay me to spend \$5 to attend the State convention, or would I better spend the money for papers and books about bees? I have the A B C.*

Indulge in both.
Ohio. S. W.

C. F. MUTH.

I would spend it on bee-literature.
California. S.

R. WILKIN.

If you think you need expanding a little, attend the convention.

Ohio. N. W.

H. R. BOARDMAN.

If you can not afford both, I would say, take the papers and books.

Wisconsin. S. W.

E. FRANCE.

If you can spend but \$5.00 you had better invest in papers and books. It will pay you to put \$5.00 in each direction.

Michigan. S. W.

JAMES HEDDON.

Unless you wish to have the pleasure of meeting some of the fraternity, it will pay you better to invest in the bee periodicals and books.

Louisiana. E. C.

P. L. VIALLOX.

That depends upon the individual. Some can not learn from books, but readily "catch on" in conversation and when they see things done.

Illinois. N. W. C.

MRS. L. HARRISON.

If you can attend a good State convention for an outlay of \$5, do so by all means, and then you will feel like spending \$5 more for papers and books.

Ohio. N. W.

A. B. MASON.

Until you have read good books and journals attentively, and followed their instructions carefully for at least a year, you had better invest your money in books and papers.

Illinois. N. C.

J. A. GREEN.

You can probably buy more new ideas in books and papers than you can gather at a convention; but if you already take the leading bee-journals, and have read the bee-books, you will learn things at a convention which no amount of reading will give you.

Illinois. N. W.

DADANT & SON.

Having but \$5 to spend, and wishing to make the most of it, you'd better spend one dollar of it for one year's subscription for a paper devoted to bee culture that will report the doings not only of your but many other conventions, and then you have \$4 left with which to buy bee-books.

Vermont. N. W.

A. E. MANUM.

Perhaps you will value my advice more if I tell you that I am sour on conventions, and seldom go. Notwithstanding this, if you have five dollars burning in your pocket, and waver between convention and some more books and

papers, I would say, go to the convention. I presume you would get a better-balanced view of some things by seeing and hearing actual men who have made a success with bees.

Ohio. N. W.

E. E. HASTY.

I hardly like to say. I think likely you'd get more information from the books and papers, but I believe it might be best to go to the convention, for you'll be pretty sure, if you do go there, to get the \$5 worth of printing afterward.

Illinois. N.

C. C. MILLER.

Invest the \$5 in bee-literature; for if you go to the convention you will not likely remember well enough to make a practical application of more than a small part of what you hear. With the books, you go over them till familiar with their contents.

Wisconsin. S. W.

S. I. FREEBORN.

I think the books and papers would very likely do you the most good—certainly so if you are a veritable novice. One must have some knowledge and experience to get much good from a convention. You would profit by meeting and talking with bee-keepers.

Michigan. C.

A. J. COOK.

If you have the A B C and take a journal, spend no more on literature until you master what you have. If you are to succeed in bee culture, the A B C or any other one standard text-book will give you all the desired present information. You might learn some points at the convention; at any rate, the change and the contact, and the touching of elbows would probably be well worth \$5 to you; and if you go, don't be afraid to ask questions—pump everybody you meet. The Rambler will try to answer if you attend his convention.

New York. E.

RAMBLER.

It would not do for me to advise you not to attend conventions; and if I should advise you not to take GLEANINGS, perhaps the editor would not print my answer. You ought to take one or more good bee-journals, and you ought also to attend one or more good conventions, which includes our own. At conventions you get something you can not get from books and papers—you get a knowledge of men, and learn who are the level-headed writers. For this reason our wide-awake editors attend conventions.

New York. C.

P. H. ELWOOD.

With me, the money and time would be more profitably spent in reading some more good works on apiculture, and putting the thoughts into practice, if I were a beginner. This is just what I did on the start. However, I realize that there is not another Doolittle, of just the same make-up as I, therefore you might spend that \$5 to good advantage in attending conventions. Don't rely too much on the advice of others, but study your own make-up; and when you see what you want, move right out along that line. If you have the right mettle in you, you will succeed, no matter how many "flat stones" are laid on your head.

New York. C.

G. M. DOOLITTLE.

[No. 191 is a hard one. If a bee-keeper has had two or three good seasons it will pay him to go to a convention. For the money, he can get more information out of books and journals; but to see and talk with an old writer whom he has known through the printed page for several years is a pleasure indeed, and his writings will have double value thereafter. It is worth something to know the visible person-

ality of writers. There are very few that have attended conventions who, on returning home, would be willing to have the money paid back to them and forfeit the benefit of what they gained by attending.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

MORE ABOUT MALTA; OLD RELICS.

GLEANINGS for June 1 contains a correcting letter from friend D. Noble about the island of Malta. Though he may know a good deal about many things in Malta, still I maintain that I was wronged in being put in Lazaretto for ten days. I was coming from Jaffa, and no cholera was there. I landed in Egypt without interference; my passport was examined, and the English steamer that brought me to Malta was set free, while I alone had to be in quarantine; and, again, the French Mediterranean squadron coming from Beyrouth, in Syria (the cholera being in that province to the north), was freely permitted to land. Why can one man more easily bring in an epidemic than several thousand soldiers and sailors? Explain this "quarantine regulation."

You likely, friend N., meant Citta Vecchia with its wonderful spring. Yes, I've seen this, the catacombs, etc., not the pressure of Paul's foot, as we have similar things here in Palestine by the dozen; but such things are only tradition. We have the print of Christ's foot on Mount Olive; we have drops of his blood; we have Elijah's bed in the rock; we have the stone that "would have called out hallelujah" on that first Palm Sunday; we have the angel Gabriel's finger-prints when he kept back the rock of the temple trying to follow Mohammed into heaven; in short, we have possible and impossible things. When I said "nothing but carob-trees," I meant as being worth any thing for bees. A few oranges, lemons, apricots, are not sufficient for honey-gathering. Plenty of fig-trees are growing around from Floriana to Sliema; but fig-trees yield no honey except the overripe fruit, just as do grapes. Olive-yards are also to be found, but all availing nothing for bees. That is what I meant. I, too, should enjoy an exchange of ideas as to the "haunts of the pirates" in the beginning of this century.

PHILIP J. BALDENSPERGER.

Jaffa, Syria, July 6.

WASPS AS AN ENEMY OF THE BEE: THEIR HABITS.

Prof. Cook:—By this mail I send you two insects—a big wasp I caught sipping honey from a honey-can, and another insect I take to be one of the *asilus* family. It was captured trying to force an entrance into one of our hives, but the door-keepers seemed to say no. Please name the insects through GLEANINGS. I enjoy your entomological talks, and only regret that the demon of work pursues me at a time when I should like to be collecting my favorites (beetles). We are thinking of trying Heddon's new hive on account of the inversion feature.

H. H. YOUNG.

Perris, Cal.

[Prof. Cook replies:]

The large beautiful wasp sent by H. H. Young is a species of *stizus*, new to me and to our collection. These wasps have a very powerful sting, which they use to paralyze their prey as they capture it for their young. They breed in cells which they dig in the earth. In

these they store the stung and paralyzed young. Thus baby wasp has tender spider or locust steak as soon as it wakes to life. These wasps, except that they sometimes capture bees, are wholly our friends. They rarely sting human beings, if the latter will leave them unmolested. I have had a fine paper wasp-nest close beside my door all the summer through. I admired the industry of Mrs. Wasp, and she surely had nothing against me or mine, for she never showed war or any thing but the most kindly spirit. Wasps like and act upon the tit-for-tat rule. If struck they strike back; if hit on the cheek, they turn not the other, but the abdomen. And this wasp morality is that, I regret to say, of many people. This species is very near, and may be *stizus grande*.

The fly seen going into the bee-hive is a robber fly, as Mr. Young thought, a species of *asilus*. It is dark in color, with a snow-white band across the abdomen. The whole under surface is white. These flies, like the wasps, are very predaceous, and destroy many of our foes. It is too bad that they will pounce upon the useful honey-bee. Yet, as I have often suggested, they do very much more good than harm.

A. J. Cook.

Agricultural College, Mich.

APPLAUSE AND CRITICISM; WHY A SUBSCRIBER LIKES GLEANINGS.

GLEANINGS contains more information suited to the masses than any other journal I have yet seen. Prof. Cook's suggestion relative to your editorial course is full of wisdom, and should not be classed with "Nubbins," or, at least, we Texans think so. It's really refreshing ("an oasis in the desert") to find one who is willing, when his faults are pointed out, to publish them to the world. Really, brother Root, do you not feel just a little bit lonesome in the journalistic world? The prevailing custom is to publish encomiums, and send criticisms to the cruel waste-basket. But your course, notwithstanding any thing that may have been said, has endeared you to the readers of GLEANINGS in this part of the world. Prof. Cook's articles are more than worth the price of GLEANINGS. The names and habits of insects and reptiles as given by him are very interesting indeed.

S. G. CRISTAL.

Stony, Tex., July 16.

A USE FOR DRONE LARVÆ AND PROPOLIS; HOW TO CATCH TROUT.

The following is a use for drone larvæ and moth-worms. I believe in making all the products of the bee-hive useful. Any one having a choice lot of young chicks they wish to force and make happy, ought to give them their drone larvæ. After cutting out the drone comb I shove off the caps; and by tapping the under side of the piece, the young drones easily drop out. The hens will begin by eating, and showing the chicks how to eat the white ones; but after a while they will take them when they are almost old enough to crawl out of their cells. If there can be any thing more nutritious I should like to find it. Moth-worms are also as good. Both of them make the best conceivable fish-bait. If you are near a trout stream or lake, don't give it away, and your friends will wonder why you are catching all the trout. At Oakland, Md., boys spend their Saturdays (and Sundays too) looking for hornets' nests, and sell them for 50 cts. and \$1.00 apiece. In 1888 a party of three fished in Browning's Lake three days, without catching a trout. My brother and myself arrived and found they were not biting; but on the second day we were able to procure a hornets' nest about the size

of my two fists; and between the hours of 5 and 7 A. M. we took 90 fine trout. We had other bait, but as soon as the larvæ gave out the fish refused the other bait. I would have given a dollar then for a handful of drones. Trout refuse the larvæ after the wings are formed.

I save all my propolis, for it is more valuable than wax. It is splendid for waxing thread for sewing leather, and it makes as good a varnish as leaf shellac. Dissolve it in alcohol. Wood alcohol is cheap and good.

ARTHUR T. GOLDSBOROUGH.

Washington, D. C., June 8.

[Friend G., your communication should certainly be a valuable one to trout-fishers if not to bee-men. In the first volume of GLEANINGS published 18 years ago, the idea of using moth-worm for baiting a hook was given; but your suggestion that drone larvæ, and the larvæ from the nests of hornets, is of value, is, so far as I know, new. Will those of our readers who are followers of our old friend Isaac Walton test and report? By all means, let us make use of the products of the hive. Will shoemakers and harness-makers please test propolis for waxing thread, and report?]

ORIGIN OF ALFALFA, OR LUCERNE.

We clip the following from the *Southern Cultivator* and *Dixie Farmer*:

I was recently on a tour in the West, and was asked the question whether I could ascertain if in any part of Alabama or Georgia an attempt had been made to raise alfalfa. This is also sometimes called lucerne. As you are in constant correspondence with the farming district, I will appreciate receiving a reply. VINDEX.

Atlanta, Ga.

The editor of the *Cultivator* gives the following answer:

Lucerne, or alfalfa, has been successfully grown in the South for fifty or more years. The writer's father cultivated it as far back as 1848, and we know not how much earlier. Seed were introduced from France, Italy, or Spain, some time in the forties, or possibly earlier, under the name of lucerne. Subsequently, some years after the acquisition of California to this Union, the same plant was introduced from that State under its new name, alfalfa, into the Western and Northern States, having originally come into California from Chili, South America. Hence its Spanish name.

WHY THE SWARM ABSCONDED.

I have something in regard to bees that the best bee-man in these parts can not answer; and if the whys and wherefores can be given, I should like to have them given in GLEANINGS. On the 11th of July, 20 minutes before 2 o'clock, I was driving along the road and saw a large swarm of bees hanging on a small tree at the roadside. They looked so nice I wanted them bad; but I dared not go back home after a hive, so I thought of a neighbor who kept bees, so I hurried and got a hive; and in just 30 minutes I had them in it. At sundown I brought them home and transferred them into one of my hives (I weighed the swarm, and had just 10 lbs. of bees) with foundation and three frames of new brood comb. At 2 o'clock Sunday they commenced to come out of that hive with a rush, and nothing would make them cluster, and to the woods they started. My boy followed them half a mile, and then lost track of them in the woods, and I bade them good-by and went into the house disgusted. In not over 20 minutes I looked out of the window at the hive, and I saw the air full of bees, and out I went. They were

going into that hive with a will that soon took all in that came, and at just 3 p. m. I opened the hive and saw that not over half of my swarm had come back. I weighed them, and had 4 lbs. back, out of the 10 lbs. that went away; so I gave them a frame of brood, sealed and unsealed, and in just 71 hours they had ten queen-cells started in good shape. Now, here is the strange part of the drama: Why did those bees come back without the queen? Some say part of the swarm got lost. Who ever heard of a bee getting lost? J. R. CASSELMAN.

Panama, N. Y., July 27.

[Friend C., all you mention is but an ordinary occurrence, with the exception of a part of the swarm coming back; and I can think of no explanation except that the swarm must have strung out to such length that a part of it without the queen got separated from the rest; and if they came back after only a short interval of twenty minutes, my opinion is that they never clustered anywhere at all. They simply got lost, and flew around in dismay, hunting for their queen; and as they could not do any better they went back to their hive where they last saw her. It is true, bees do not often get lost—that is, they do not get lost to such an extent but that they can find their way back to their hive; and that is just what these bees did do. The other part of the swarm got away from them, and they had no means of "catching on" to the lost trail, inasmuch as it all happened up in the air.]

THE BROTHERHOOD OF FEELING IN GLEANINGS.

Friend E. R.—In your criticism, or comments, on my article (p. 418) you mention that Mr. Hoffman uses live rabbits only $\frac{1}{4}$ in. wide and deep. That is a fact which was not mentioned in any other article in regard to the hive, and must, to some extent, assist in the prevention of the destroying of the lives of our little laborers. 1. In regard to the zinc roofs I use, they cost me about one shilling each, size 21 x 22 inches. They need no paint, and are practically everlasting. 2. In regard to escapes, I was prepossessed with the one brought out by Mr. Porter, and made one on the same principle to try it. I hope I have not made myself liable for infringing a patent, however; and although the night was cold, there were only a very few bees in the body next morning. 3. I see you ask for opinions as to the best or most attractive features of your journal. To me the best feature of it was, and is still, its warm genial atmosphere. It makes one feel at home to read of "friend" Root, "friend" Miller, "friend" Doolittle, Terry, and the rest; and to see the way in which every one corrects every one else without the corrected one getting mad and leaving the school does me good; and although I may never cross the tide that separates us, yet the influence of this broad charity helps one to stand up and do his own duty in a cheerful spirit; for we are not all brothers and sisters, with, in the aggregate, common interests? 4. I have extracted the first honey this season to-day, July 1. The weather is unsettled at present, but all around is one mass of white clover, and none cut yet, as, owing to the protracted drouth, the hay was too short and poor, and the present showers promise to help it a little.

J. STORMONTH, JR.

Kirkbride Sillith, Cumb. Co., England.

A STATEMENT OF ACCOUNT WITH THE BEES.

I will give you my experience and some figures, the result of the nice queen and two pounds of bees I bought of you in August, 1889.

This is considered a very poor country for bees, and I think it is justly considered so.

August, 1889, to 2 lbs. bees, one queen, - - - -	Dr.	Cr.
Express on same - - - -	\$5 00	1 75
By August, 1890, increased to 4 colonies, at \$5 00 each, - - - -		\$20 00
By July, 1891, increase of 6 colonies, at \$5 00 each, - - - -		30 00
By July, 1891, sold honey to the amount of - - - -		17 00
By July, 1891, 3 queens - - - -		3 00
By July, 1891, 10 hives cost - - - -	11 00	
Totals - - - -	\$17 75	\$70 00
Net profit in 2 years, - - - -		52 25

You will notice that I valued the bees at \$5.00 per colony, but I would not take \$10.00 per colony, cash, for them. I feel sure that I have as nice and as good working bees as any one in the business. Since I have had Italians, a man could not give me the common black bees, as I consider the blacks as worthless in comparison with the Italians.

I have one question I wish to ask you. I have been told that bees could not be kept on a railroad where coal is used—that the coal would kill out the bees in a year or so. Is it so? If it is, I shall have to move mine off somewhere from the railroad, as I will not part with my bees now, for I love them too well to have them destroyed in that way.

I think the Dovetailed hive will be the hive for me in the future, as the one I bought of you a few days ago shows, according to my notion, in addition to my figures. I expect to get at least \$5.00, or may be, \$10.00 worth of honey yet from my bees this season. H. N. JOHNSON.

Mooresville, N. C., July 25.

[Don't be alarmed because of coal smoke, and the proximity of railroads. We have two railroads, with attendant switches, within 100 feet of us, besides the smoke from our own factory chimney. If there were any truth in such a statement, the bees ought to have been dead long ago.]

ANOTHER COLONY LIVING AND PROSPERING WITHOUT A HIVE.

I discovered, a few days ago, an outdoor colony of bees which seemed to prefer the pure air, plenty of it. They had located on an outside limb of an apple-tree, within 20 feet of my brother's residence in Norwood, a beautiful suburb of Cincinnati. They had evidently been there for some three or four weeks, for they had some four sheets of comb hanging down from the small limbs to which they were attached, and bees already hatching. I would have left them there to see what effect the weather would have, and how long they would endure the winter frosts, but for the fact that the wind had already detached one of the combs, which fell to the ground, and was the means of discovering to me the location of the swarm.

Cincinnati, O., July 18. J. FERRIS PATTON.

[We have had several other recorded instances where colonies have lived and prospered in the open air; but that prosperity, except in warm weather, probably would not extend beyond the summer season.]

A QUEEN LAYING DRONE EGGS AFTER BEING CHILLED.

In June, 1890, I started a nucleus which was rather weak, but succeeded in rearing a fine Italian queen, and in August it was strong and running over with bees. Jan. 7, for some unaccountable reason, the queen-bees and all

left their hive (a two-frame box $3\frac{1}{2}$ in. x 10 x 18 in. long) and clustered on the front of a hive close by. During the night we had a cold rain, or sleet; and when I discovered them in the morning they were more or less covered with ice. Supposing they were all dead, I brushed them off and found the queen, which, to all appearance, was chilled to death; but after holding her in my hands a short time she began to show signs of life, and in a few minutes was lively. During the same day, Jan. 7, I discovered a queenless colony which was very weak, and after laying the chilled bees in the sun awhile, most of them revived. I then put the queen and all into the weak colony. It being cold again until about the 20th I did not examine them until that time, and found quite a lot of eggs and some capped brood; but all had the appearance of drone brood. After that time I examined them every warm day until March 25th, and found that nothing but drone eggs had been laid by the queen since she was placed in the hive. Was the cause of her laying all drone eggs the result of her being chilled?

R. J. ANDERSON.

Palouse City, Wash., July 17.

[You are right, friend A. The fact that freezing would injure a queen so that she would produce only drones, was given by Baron von Berlepsch. You will find an account of his experiments in a little book called "The Dzierzon Theory."]

PLURALITY OF QUEENS IN ONE BROOD-NEST.

I have, by long experience, found out that, if one queen is good, two are better; so I have succeeded in placing any number of queens in the same brood-chamber, all loose on the same combs, and they all agree nicely. I have seen them meet on the combs and caress each other. I should like to hear from the bee-men, and should like to know all opinions. I have one colony with four queens in, and I can take out enough brood to rear up all the weak stock in no time.

G. W. PALMER.

Greeley, Col., June 5.

[You are putting it too strong, friend P., I am pretty sure. I have seen queens that, at certain times, would behave nicely, even three or four on one comb. But I have also, a great many more times, seen them attack each other so fiercely that one was lost before I could hardly interfere. We tested a great number of these encounters with a glass observatory hive years ago. If you mean to tell us that you can at any time put two or three queens into a hive and not have them molest each other, it must be something new.]

PREVENTION OF FIRST SWARMS FROM RE-SWARMING.

Your A B C and all the prominent bee-writers have much to say about preventing after-swarms; but nowhere do I find any thing about preventing first swarms from re-swarming. As the large bee-keepers say nothing about this trouble, I conclude they do not have re-swarming, as I call it, and I should like to know how they prevent it.

E. BENTING.

White Pine, Tenn., June 26.

[With black bees, friend B., it is very seldom that any sort of swarm sends out a swarm the same season. With Italians, however, and our foreign races of bees, when they get the swarming mania one swarm may send out several during a good honey-flow and a long season.]

HOW TO GROW GOURDS FLAT, THE RIGHT SHAPE FOR BEE-FEEDERS.

I notice Mrs. Axtell speaks of gourds for making feeders. They can be grown flat like a

pan by putting a board on each side when they are small; they will then grow flat instead of round. The boards should be planed; and a nice way is to nail a block between each end of the boards, the thickness you want to grow your gourd.

C. R. RUTH.

Elmsport, Pa., July 20.

We are having a great run on basswood honey, which has been good for many years without one exception.

F. B. JONES.

Howard, Minn., July 23.

A REPORT THAT IS ENCOURAGING.

Our bees, 110 old colonies, gathered over 12,000 lbs. surplus, and have plenty for winter—all from basswood. A colony on the scales got 175 lbs. from the 10th to the 20th of July.

Viola, Wis., Aug 2.

M. A. GILL.

I have 21 stands of bees, from which I have extracted this season, up to date, about 2100 lbs. This, I think, will beat the record, and they are now storing honey as fast as ever. The season is not half over. I have also managed several apiaries for my neighbors. Bees are all doing well here.

A. B. FARRAR.

Palma Sola, Florida, July 18.

We are now packing honey-cases and sections of your make. The season is very late. This is the first we could get off, and yet our hives are "packed" to keep them warm. To-day the thermometer declares 108° Fah. The general opinion seems to be that this will be a good season for honey, but considerably later than usual on account of the cold backward spring.

Foster's Station, Cal., July 15. J. I. FOOT.

A GOOD REPORT.

My bees are doing well. I am extracting 2 to $2\frac{1}{2}$ gallons from the hive, and selling at \$1.00 per gallon. I have 15 hives. I have sold 4 at \$3.50 this spring. I started with one hive five years ago (a present), and am out, say, \$35; but I have sold enough to overpay it. I had honey all the time, and have the bees left as profit.

Kopperl, Tex., July 10. RICE MAXEY.

1000 LBS. OF HORSEMENT HONEY FROM 60 COLONIES.

We have had a fine honey year so far. My bees, 60 stands, gathered about 1000 lbs. of honey from horsemint. It is very good honey. I am counting on 2500 lbs. of honey this year. There are some 20 acres in horsemint in reach of my bees, and may be a little more than that. It has been in bloom all June. It grows on all waste land in this country, among other weeds, and is hurtful to any thing, and hard to get rid of. I think it would be well to sow on all waste land in fall.

J. F. TEEL.

Elmont, Tex., July 5.

A DROUTH IN ARKANSAS.

A drouth is upon us, and the prospect for a white-honey crop from our main plant (cotton) is not promising. The planters will suffer as well, and I hope I am not with the number who say, "Misery loves company." I have taken only 1100 lbs. from my home yard of 100 colonies. The queen-trade, however, is brisk. I have shipped \$30 to date, and have orders for 50 more, which will go in the next ten days. I will make a final report at the end of the season.

W. H. LAWS.

Lavaca, Ark., July 22.

SPECIAL DEPARTMENT FOR A. I. ROOT, AND HIS FRIENDS WHO LIKE TO RAISE CROPS.

HOW TO RAISE STRAWBERRIES WITHOUT SO MUCH HARD WORK.

Candidly, I do not know, and that is what troubles me; and I will tell you how far I have got in looking over the matter. Friend Terry thinks the plants might be as near as six inches apart; and if the ground is rich it will give us fine large fruit. Where ground is expensive we wish to have it fully covered—that is, to its utmost capacity. If the plants are nearer than 6 inches each way, they crowd each other so much as to diminish the size of the berries if not the number of quarts. Well, we must have paths to walk in, for the ground will all be tramped hard, and the plants injured; therefore friend Terry has 3 feet of matted row and then one foot of path, and so on. Now, it is an awful big job (if you will excuse the phraseology) to get the matted row 3 feet wide, and thin out the plants so they are about 6 inches apart. Then in ordinary soil it is a big task to get the weeds out.

The ideal way would be to have the plants set in a bed 3 feet wide, and just 6 in. apart; and, in fact, one of our leading strawberry-growers does recommend just this way. Make long beds 3 feet wide, with paths one foot wide between them; then set your plants on these 3-foot beds 7 inches apart. But now comes in the matter of runners. If runners are allowed to put out and take root, where would be our ideal bed of plants all 7 inches apart? There is no way but to keep picking out or cutting off the runners; and unless you let runners grow, your bed is good for only one season, or at most, two seasons. You see, the second season the plants would all be *old*; and Terry, and, I believe, almost everybody else, has demonstrated that the best and largest fruit comes from vigorous *young* plants; therefore for garden culture I would advise just the plan given above. If the plants are put out with the transplanting-tubes in July, August, or even September, they will be strong enough to bear a fine crop of fruit the next season. After the fruit is gathered I would give good cultivation (by hand or wheel hoes) and keep off all runners. By fruiting time the second season they would be tremendously strong plants, and pretty severely crowded; yet they would give an enormous crop of fruit, even if not quite so large in size as at the first season. Plants crowded like this will do very well without mulching, for the fruit-stalks will grow longer than ordinary to get to the light; and this, with the great masses of foliage, will keep the berries from the ground. If the fruiting season should be very wet, however, the berries would be, very many of them, very soft, and not as sweet as where they have more room to get sun and air. If, on the contrary, we should have a dry time during fruiting, these strong plants would shade the ground so thoroughly that they would give fine fruit when others wider spaced might be dried up. This does very well for the garden or small plantations; but I suppose the majority of our readers are more interested in strawberries out in the fields, cultivated by horse-power.

And now we come back to the fact that by far the easiest and cheapest way is to let each plant send out runners. The spacing would be a great deal better, it is true, if the runners could be made to go out like the spokes of a wheel, so as to cover the ground equally; but this is a difficult task too, and requires an expert. Just after fruiting, some of our Haverlands got to be very weedy—so much so that

one of the men decided that the cheapest way to clean them out was to pull up plants that had rooted; then, with cultivator and rakes, clean out the weeds completely, then take the other side of the row, throwing the plants and runners over to the side already cleaned, and clean out that side, then put each runner in its place, covering each plant with dirt. How do you suppose it turned out? Why, the first time through there were so many plants with their roots sticking up in the air that I sent the boys back to do it over again; and after the boys had spent more time on that one row than I could afford, I sent a man to space the runners, and put the plants in the ground where they ought to be. But I never want to do that way again. It cost a good deal more than to have got the weeds out by hand. In our plant-gardens we have often taken some valuable variety and trained the runners by looking after them every day. In this way we can carry each one straight out from the mother-plant, to give all the plants their proper share of room, and make the mother-plant cover quite a large area—say three or four feet in every direction from the center. Now, this gives us beautiful strong plants and the finest berries. But you can not do any cultivating—or, at least, not very much. You can cultivate them about as you do water-melons when they begin to set fruit. All the weeds that come up must be got out by hand.

And now we begin to long for some soil that is rich and strong, but which does not have any weed-seeds in it. The strawberry-grower should have a piece of land specially for the purpose, where no weed of any kind is ever allowed to go to seed. Neither should any weeds be allowed to go to seed in fence-corners or on neighboring land. In fact, no weeds should produce seed within a quarter of a mile of the strawberry-plantation. You may say this is too much fuss and bother; but I tell you there has got to be fuss and bother somewhere; and prevention in this case is ever so much better than cure. Then, again, this matter of mulching comes in. In one of the strawberry-books we have a picture of a machine made of stoneware that goes all around the plant, and keeps it out of the dirt; and somewhere I have read of a kind of brick or tile with a hole through it, to let the strawberry-plant come up through, but covering the ground perfectly everywhere else, so no weeds can grow. I wonder whether anybody has tried that plan. Will strawberries grow and bear profitably where the ground is covered in that way? After all this discussion we finally come around to the fact that Terry's plan is less labor, and perhaps the nearest to perfection, of any thing that has yet been devised. But he gets his fertility by turning under clover. A good many of us get it by buying stable manure; and, oh dear me! what weeds we do get through stable manure! Sometimes I have declared that I would give it up and turn under clover. But we get along with the stable manure pretty well with almost every crop except strawberries. Some of you will say, "Why, brother Root, enrich your ground with chemical manures, or our modern fertilizers." Well, there I am just where the trouble is. On our ground I have never been able to discover any good result whatever from handling any of the fertilizers offered—that is, with strawberries. Ashes and bonedust do pretty well. Guano is also all right, but it costs too much. Our good friend "Joseph" (Tuscio Greiner) has just put out a very neat little book that makes the whole matter of chemical fertilizers plain and simple. The book is sound on chemistry, especially that which pertains to agriculture, and it teaches in a plainer and simpler way than any other text-book I have ever yet come

across. But it speaks of success only, with these chemical manures. Its teachings are right in line with the *Rural New-Yorker* and many other agricultural papers. What does it mean, that neither Terry nor I can get any such results? Right in the plant-beds just before the window where I am writing we have a lot of American Pearl onions growing beautifully. They are put out very thickly in rows, to raise sets. Well, we have tried putting nitrate of soda on two rows, then skipping three, and so on through the bed. We skip three for fear the nitrate might affect the two outside rows. We have tried it in light doses and in heavy doses. In our last experiment we put on so much that it injured quite perceptibly the two rows where it was applied. Now, nitrate of soda is specially recommended for onions; yet on our soil it has never yet in any case been of any benefit whatever; on the contrary, where it has produced any effect, it has been a damage. Some may say that our ground is too rich already. But this can not be. A part of the ground is new ground, and very poor—so poor that the onions have made a very feeble growth. What is the matter? I have almost come to the point where I should be glad to pay our experiment stations if they would send me a man who would teach us how to make nitrate of soda or any other chemical manure take the place of stable manure. I am not stubborn nor contrary a particle. I am, on the other hand, exceedingly desirous that the truth of this matter should come out, especially if we as a people are throwing away our hard earnings in the purchase of chemical fertilizers.

SPORT OF TOMATOES, POTATOES, ETC.

Mr. Root:—You complain about spurious tomato seed which you have sent out, and say that the bee-men you got the seed of have been careless if nothing worse. Well, friend R., you ought not to be uncharitable and so hard on your bee-friends. The Ignatum tomato is by no means a settled sort. I think it is nothing but a sport of some other variety, and hence liable to sport more or less. I have grown it, and raised my own seed ever since you introduced it, and I have been very careful; but in spite of me I had this spring, in a batch of perhaps 3000 to 4000 plants, three plants showing foliage like the Mikado, with the only difference that they had the same yellow tint as the Ignatum.

But, look here, old friend. You have not only sent out spurious *tomato* seeds, but also spurious potatoes. What were supposed to be Early Ohios I received, are some very late sorts. I was very suspicious about them when I received them; and had they not hailed from A. I. Root I would certainly have remonstrated; but as it was, I thought there could hardly be a mistake about them; but I know now there is little mistake, if nothing worse, somewhere. I think you have been humbugged with them, because *potatoes* do not *sport*—at least, not so much. I wanted to plant cabbage after I had the potatoes out; but it got too late, so I wanted to sow turnips; but it will get too late. The potatoes are green yet; and that is not all; for had they been Ohios I could have got \$1.50 per bushel; but now I can get only 50 cts.—quite a loss for one little blunder. But, hold on. I don't want to find fault with you. You can not help it; and although I suffer a little loss from the spurious Ohios, the Puritans make it up. They are the best potatoes I ever raised. There is not a small potato in a hill. They are about as large as a fist. They call forth exclamations of surprise wherever I roll them out of a basket. I shall want two barrels for seed this fall. I always think seed grown in a different soil from

my own is better than that grown here. This you will certainly call only a notion of mine; but, never mind. JULIUS JOHANNSEN.

Port Clinton, O., July 28.

[Friend J., I am exceedingly obliged to you, and more especially for your injunction to have more charity; but I do not believe charity will cover all of it—about tomatoes, I mean. I am well aware of what you say, that tomatoes are very liable to sport. I, too, have found a potato-leaf plant where it did not seem possible that any of the seed had got into the ground. I have also found occasionally a plant with the dark compact foliage of the Champion; and I have thought that, if one should take almost any one kind of our best tomatoes, and grow it very largely, he would, say once in a thousand, or in several thousand, get a sport which, if developed, would give almost any of the other kinds. This accounts for the fact that most of our tomatoes have been brought out simultaneously by different people. There is one other solution of this state of affairs. If these other tomatoes have been grown even two or three years before on the same ground, there is liable to be some seeds that have lain dormant in the soil. Sometimes we sow tomatoes in the greenhouse, and only a part of the seed comes up. Well, every time that dirt is worked over, some of these seeds will germinate and grow, for perhaps two or three years. The lot of seed, however, that I mentioned, which was bought for pure Ignatum, showed perhaps ten per cent potato leaf. I do not think this was a sport. In regard to the Ohio potatoes, last spring they were so scarce that we advertised for them in our county paper. One lot was brought to our place, the owner declaring they were the genuine Early Ohio. But we discarded them on account of the appearance of the tubers. It is something I very much dislike to do, to buy seeds of any kind of somebody I don't know; and I am resolved to be, hereafter, prepared with potatoes, at least, of our own growing. I have never been humbugged when I have bought such things of our established seedsmen. It is only when I buy of obscure individuals. In order to keep seed potatoes on hand that we know are genuine, I have once or twice paid 50 cts. a bushel for potatoes in the fall, and sold them for ten cents in the spring, or threw them away—that is, I disposed of a *few* in that way. The only safe way is to put away *more* than enough; but in that case we must have profit enough to cover the loss of what we do not succeed in selling. I think we can supply you with Early Puritan next spring or even this fall. Friend J., and I am very much obliged to you indeed for your kind and clever way of excusing our blunders. We will try to remember when we have future deal with you.]

STRAWBERRIES; PREPARING THE GROUND, ETC.

I wish you could see those Haverlands you sent me July 8. Some have runners 12 inches long. I have raised berries for market a number of years, and have grown ten varieties. I think the Haverlands and Michel's Early are the best growers I ever saw. My half-acre of Crescent and Sharpless was hurt by late frost, but I sold 2000 quarts. I think you are right about clover sod for strawberries. The finest berries I ever raised were where I plowed under clover. The variety was Sharpless. The next best, I think, is a heavy crop of buckwheat turned under. In 1890 I turned under half an acre of buckwheat. This spring I put on a coat of manure. Oh my! the Jessie and Michel's Early! I never saw such thrifty plants.

Chillicothe, O., July 30.

F. H. SEELING.

RECENT DEVELOPMENTS

CONDUCTED BY ERNEST R. ROOT.

OUR NEW DOVETAILED WINTER CASE FOR THE DOVETAILED HIVE; ALSO OUR ONE-STORY DOVETAILED CHAFF HIVE.

While the two-story chaff hive wintered bees successfully, it is cumbersome and expensive, and not adapted to out-apiaries or for general moving. We (Mr. Calvert, Mr. Warner, and myself) have been considering the matter a good deal, and after two years' experimenting we now find ourselves ready to offer the bee-keeping public an outside winter case, and also a one-story dovetailed chaff hive that is both light and portable, as well as cheap. We don't therefore propose to offer to beginners and others something we have not tried; and although the winter case differs in some slight details from the one we used with success for the past two winters, the essential principle has been retained.

The fact confronts all who have single-walled hives, and who are not disposed to winter in cellars or repositories, that they desire something which, at a slight additional expense, will convert their hives into double-walled abodes for bees during the winter. Again, there are other bee-keepers who winter indoors who wish something cheap and serviceable in the way of a protection to put over the hives after they are set out in the spring, and here it is.

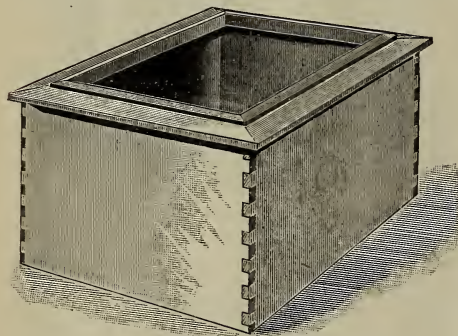


FIG. 1. DOVETAILED WINTER CASE.

This is simply a shell made of $\frac{3}{8}$ -inch lumber, dovetailed at the corners, and is large enough so as to leave $1\frac{1}{2}$ inches space between the sides and ends, and deep enough to allow of a cushion 3 inches deep. To save the expense of a cover we contract, as it were, the top, with an ordinary chaff-hive water-table. This makes it possible to use a regular Dovetailed-hive cover.

Fig. 2 shows how the case is set down over the Dovetailed hive. Our experiments last winter demonstrated pretty clearly that a chaff cushion on top of the brood-nest is one of the things we can not very well dispense with. We need something to take up the moisture arising from the cluster, at the same time something that will tuck down around snug to the top edge of the hive. The cushion should be three inches deep, just large enough to fit down inside the winter case, and is to be set on top of the brood-frames with a Hill's device under as shown in diagram Fig. 3. This cushion, therefore, will be large enough to project over the sides of the inner hive about $1\frac{1}{2}$ inches all around. The case is then slid over, and the cover that was

on the single-walled hive is adjusted to the single-walled case. Well, then, you ask, how do you provide against the cold entering under the bottom of the case? To the bottom inside edges of both sides and ends is nailed $\frac{1}{8}$ -inch-

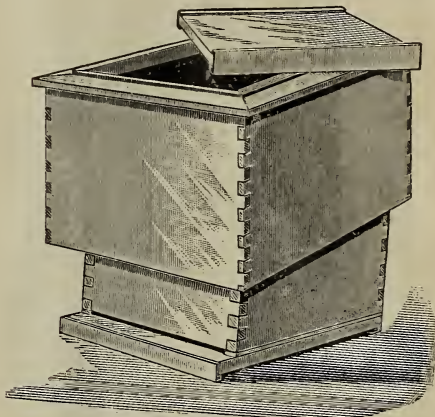


FIG. 2. DOVETAILED WINTER CASE.

square sticks. As the whole space to be taken up is $1\frac{1}{2}$ inches, these sticks are padded the same as division-boards, with a roll of burlap (see Fig. 3). The outside winter case is then slid down so that it covers the whole body of the hive. The front end of the case is left so as to leave an entrance, the back end being let down a little lower, something of the style of a hat on the back of the head. All this provides for dead-air space around the sides of the hive and chaff packing above, which my experiments thus far in this locality say is enough. If any one doesn't wish to risk the dead-air space, he can pour in packing material before he puts on the cover, and before he puts on the cushion. This done, he can tuck in the cushion, when he has a packed hive.

The diagram below will make the matter a little plainer. The position of the cushion and the padded square sticks is shown. The space between the two walls is $1\frac{1}{2}$ inches. The space between the cover and the brood-frames is 3 inches.

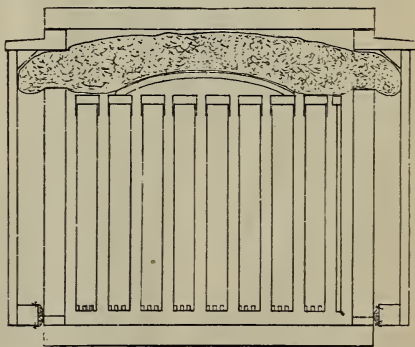


FIG. 3. SHOWING THE CROSS-SECTION OF OUTSIDE WINTER CASE, HIVE-CUSHION, AND PADDED STICKS.

This winter case is also wide enough to be set down over a ten-frame Simplicity or ten-frame Dovetailed hive, but, of course, it doesn't leave the same space between the sides, although that between the ends is the same, but

in the ten-frame hive the chaff division-board is, of course, to be set down on the inside of the inner hive. We therefore have the same double-walled space that we have with the eight-frame hive, only we secure it in a different way.

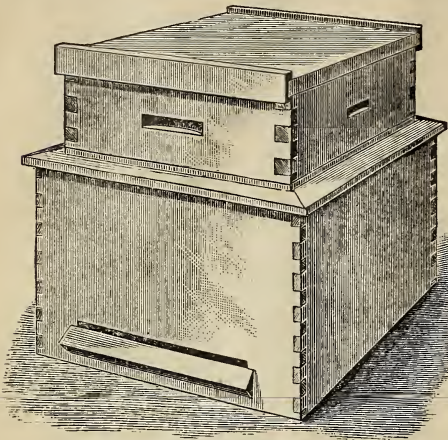


FIG. 4.—OUR PERMANENT DOUBLE-WALLED CHAFF-PACKED DOVETAILED HIVE.

It became evident to us that a one-story chaff hive is preferable to one made of two stories. First, to secure lightness; and, second, that the same may be interchangeable with the Dovetailed hive or any of its furniture. The hive above secures both of these advantages, and at the same time it weighs but a trifle more than the permanent single-walled hives. It is made of $\frac{3}{8}$ -inch lumber, also dovetailed at the corners. It resembles somewhat our former one-

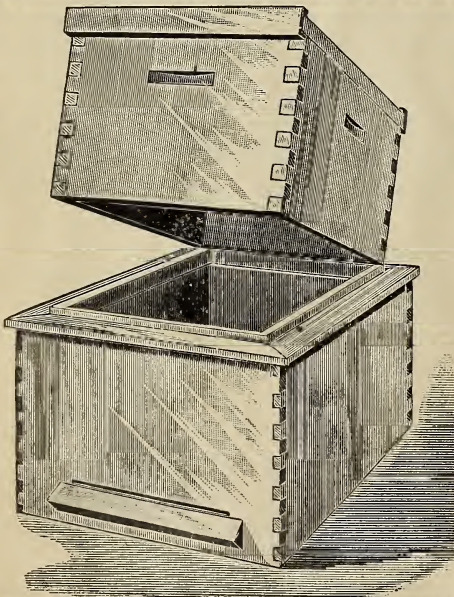


FIG. 5.—THE DOVETAILED CHAFF HIVE WITH AN EIGHT-FRAME SINGLE-WALLED DOVETAILED BODY FOR THE UPPER STORY.

story chaff, which we have changed as shown above. It now takes Dovetailed supers for Dovetailed hive, instead of Simplicity supers and furniture. As the latter now seems to be

going out of date, this change seems to be necessary. Now, the same dovetailed winter case is also a dovetailed shell to the permanent double-walled chaff hive, the inside hive being made of $\frac{3}{8}$ lumber as well as outside. The inside width is $12\frac{1}{2}$, and will take eight frames and a division-board with wedge. Accordingly, if any one should get the cases and afterward wish to make a permanent double hive, he can do so by getting the extra parts.

Figure 5 shows how this same hive may be made to take a full depth story. The water-table has a raised projection, so that the separate parts of the hive come together as square joints, a feature that is nowadays so much prized by bee-keepers; but there are some who prefer the telescopic feature for winter. We have therefore made a 7-inch cover of $\frac{3}{4}$ -inch lumber that slides over this raised projection. This cover is just large enough to take a cushion or a dovetailed super, the same as shown in Fig. 5, above.

The space between the walls is $1\frac{1}{2}$ inches. There is also a double bottom and tarred paper to prevent rotting. The hive may be packed or not, as desired, and the whole weighs only 2 lbs. more than the single-walled hive with

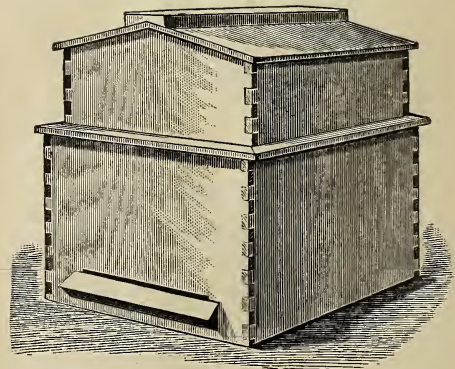


FIG. 6.—THE DOVETAILED CHAFF HIVE WITH $\frac{3}{8}$ -INCH TELESCOPIC COVER.

bottom-board. It will be observed that we have dispensed with the expensive corner posts, and use instead the cheaper dovetailed corners, which are equally strong. Instead of having the hive made of a lot of three-inch slats, the sides are made of one whole piece. This makes it much simpler to put together, and also makes the two separate walls as near air-tight as possible. The hive in inside dimensions is the same as the Dovetailed hive, and in outside dimensions it is $16\frac{1}{2} \times 23$, and can be loaded into a wagon with almost as much economy of space as the single-walled hive. This makes it possible to secure in this hive all the advantages of the single-walled hive, with the additional advantages of a winter and spring hive. Such a hive can be carried into the cellar, the projection of the water-table affording an excellent grip to hold the hive by. Then the advantage in setting out a double-walled hive in spring, when the weather is so uncertain, will be apparent, but we intend this hive to be a successful outdoor winter hive.

This hive is not an experiment. The same thing in the one-story chaff hive we formerly offered has given us excellent results for the past seven or eight years. The packing space between the walls is the same, so that we know we have retained the essential principle that goes to make a good winter hive, and that we are not putting on the public an experiment, but an old tried hive in a new dress.

OUR HOMES.

He that is faithful in that which is least is faithful also in much.—LUKE 16:10.

This has been one of my favorite texts for so many years, and I have talked on it so incessantly, perhaps some apology should be made for taking it up again. But I really think the lack of success in business, and the recent complaints from many quarters that farming does not pay, and other kinds of business do not pay, comes more from lack in the special line of our text than from any other one thing. In other words, the greatest foe of the farmer—yes, and the village mechanic too, is not the millionaires of our land, but the half-heartedness of the very people who complain. Our good friend W. I. Chamberlain has touched the matter up with some practical illustrations from real life with such wonderful vividness in the *Ohio Farmer* for Aug. 1st, that I have decided to copy his article entire, and here it is:

THE NON-EXPERTNESS OF VILLAGE EXPERTS.

"Mr. Hoot," said a student friend of mine to a village photographer, showing him a first-class city photograph, which had the fine shading and delicate finish of the real artist—"Mr. Hoot, I wish you would make our class photographs look like that."

"Ah!" said Mr. Hoot looking at the city photo. "Ah! if I only *could* make them look like that, *my gallery would be in Chicago*, not in Ames, and I should soon be rich!" That longing look showed that he is a rising man. Soon a small city, and then a large one, will get him. For the "room at the top" for experts and for those who "do the best they know how or can learn how," is usually in the city. And so the cities take our best experts and leave us —?

Twenty-six years ago a village expert grained a part of my house. It is as good as ever to-day, and as fine in quality as the best city graining. He was a real expert, and in two years he was foreman, then partner, then proprietor of a painting, graining, and papering establishment in Cleveland. Many of those that remain as village experts lack not only skill, but push, enterprise, desire to excel and please.

"Alas! I could a tale unfold" of my experience with *real* experts and with *so-called* experts. I once hired a real expert to paper a number of rooms, and paid \$3.50 per day and board and car fare from Des Moines to Ames. He averaged 30 single rolls per day; ceiling, wall, and border, fitting edge to edge, trimming both edges; and he left no "nasty mess" on floor and paint to be cleaned up. One day he hung 45 rolls "just for the fun of it;" and to show what he could do on plain ceiling and good wall. I once hired a village "expert" at \$2.50 per day. He averaged about 10 to 12 rolls per day, lapped the edges in the old-fashioned way, and left behind him a sieve of housecleaning—paper pasted to the floors, and *trumped in*, mixed with tobacco juice.

A village "expert" once painted my blinds, and another, at another time, oiled them, both in my absence and while the house was vacant. Both left the slats *shut*, lapping upon each other to dry, instead of rolled wide open at right angles. The slats stuck as if glued. When we came to use the house we had to loosen each individual slat by hand or screw-driver, and with

great care not to break them or pull the little staples, before they would roll. When my good wife tried to turn them for a long time one day to ventilate a chamber, without throwing the blinds themselves wide open, she at last made the somewhat unchristian or hyperbolic remark that she "would just like to wring those painters' necks!" I could actually have oiled the blinds in less time than it took to *un-glue* them.

A real expert once did some painting and kalsomining inside. He did not ask to have furniture or carpets removed or covered; and when I asked him how he dared risk it, he made the somewhat sarcastic remark, that when he "couldn't work without spattering and daubing he would quit the business." A village "expert" at another time daubed and spattered the hard-wood floors around the "mop-boards" so that the borders around the rugs had to be scraped with glass, and sandpapered, *longer than it took to paint the room*, before the borders were fit to be dressed with "Butcher's Boston polish" or "hard oil finish." The window glass was spattered and daubed too, so that it took much muscle and much cleaning soda to make them fit to be seen. I afterward told him about the floors. "Why, he supposed we would carpet them." I wanted to ask him if he supposed we would carpet the window glass, but forbore.

Then, too, the delays, mistakes, and cost! For example, on an excellent old wagon, 26 years old, one wheel collapsed, and a few days later another, showing the spokes to be brash. They had been put in new some six years before by a village expert, inferior timber. When this second one collapsed I sent it and the two still unbroken, but evidently untrustworthy, to another village expert, with explicit instructions to fill *all three* wheels with new spokes complete, and set the tires. Well, next day, by mere chance I went to town and to the shop. He was *setting the tires with the old spokes still in*. He had "only spokes enough for one wheel, and the other two looked pretty good." "Did I leave it to his judgment?" "No." "Did I probably know what I wanted?" "Yes." So the wagon waited three days more until he sent to the city and got *just enough more spokes* to fill the two wheels, and of course I had to pay the express and "stand" the delay. Strange that I ever sent another job to him, but pretty soon I did—a lumber wagon-box for a new bottom. I was too busy to do it myself. "Yes, he would do it promptly. It would take only two hours." But not needing it I left it a full week, to be *sure* it should be done. Then I wanted it to drive ten miles for special sizes, elbows and connections of sewer-pipe for my main tile outlet that carries the water of some 50 acres. I went at noon for the big afternoon's drive. The box *had not been touched*. He "hadn't any lumber," and "could not get any planed at the mill." They "had broken the planer," etc. I felt like advising him to *keep on hand* enough dressed and seasoned lumber to make himself a coffin, or else grind his hand-planes enough to dress 33 feet of lumber on one side for a wagon-box bottom! I took the box to the other shop and had a new one complete. Last week I bought a new wagon, box, top box, spring seat, and brakes complete, for almost exactly twice what I have paid for repairs and improvements on the old one within two months! In one case I paid their own prices to village experts for retail piece work. In the other case I paid *my* price, aided by sharp competition, to a great concern of city experts, that turns out thousands of wagons each year. Retail and piece-work prices will soon ruin the farmer.

But I was speaking of the annoyance, carelessness, and delays in dealing with village experts. My driving horse (he works too) had lost a front shoe, running in pasture, and the other was loose. I sent him by a boy with a note stating in explicit terms that I wanted both front shoes set, and within three hours, as I needed him for a long drive. The horse came back with *one shoe set* and the other hanging clattering by two nails. I took him back myself at great inconvenience and delay. The "expert" pulled my note from his vest pocket *unread*. "The boy didn't say you wanted both set." "But the note did, and I will find a shop where they can find time to *find out* and do what I want."

Such things, actual recent occurrences, make one think the village experts do not want one's custom. There seems to be no effort to understand, accommodate, expedite, please, excel. And such experiences for years have made me gradually fit up what is, at last, pretty nearly my ideal of the *farmer's workshop*. There, in stormy weather or in sudden emergency, I can, and do, do almost all kinds of mechanical work except hot blacksmithing, and do it quicker and with far less annoyance than I can take or send the job (especially small ones) to town or get a village expert to do them, and oftentimes do them better and more thoroughly.

This shop with its tools and supplies of materials and conveniences, and the saving and convenience I find it to be to me, I will try to describe in the next number. The non-expertness of village experts is one of the "difficulties" of the farmer. It will be his "fault" if he does not either overcome or avoid it.

W. I. CHAMBERLAIN.

It would seem from the above as if wagon-makers are especially guilty in the line friend C. has marked out. About a year ago one of our heavy wagons broke down a wheel while we were helping to move some timber for the new railway. We sent the wagon to the shop, with instructions to put in none but the very best timber for spokes. We had the usual disappointment in getting it when promised; and, almost as soon as used, the same wheel broke down *again* under a very moderate load. It was sent back and repaired again, but we were compelled to pay full price right through. In fact, both bills for repairing the wheel were more than a new wheel would cost outright. The proprietor said he *knew it*, but it was always that way; and when I showed him a piece of one of the spokes he first put in, I ask him if he called that lumber fit for spokes for a heavy wagon, and he candidly admitted that it was not, but yet refused to make any abatement, claiming that he was in no way at fault, because he used the *best lumber he had*. Now, this strikes one great and important point. The *average* village mechanic is very much averse to taking any responsibility or to making any reduction if his work amounts to nothing.

Another case occurs to me right here. I once employed a man to mend a wheelbarrow. The charge was \$1.50. When I remonstrated he said he did not get quite his regular price per hour, even then. When questioned closely as to how he came to work so many hours on that wheelbarrow he said one of the steel pivots on which the wheel turned was bent, and he thought it ought to be straightened. In attempting to straighten it, however, the tempered steel snapped off, and it took him a long time to get the broken piece out, so as to put in a new one. Now, when he undertook to straighten the bent pivot he did it on his *own responsibility*, and I should say that it was his

own job, for I employed him only to put a new handle in the barrow. As he could not understand, however, why he should be called upon to lose his time, I paid the bill. While I was talking with him I explained it by an illustration. In my hands were a lot of spoiled sections. They were made of beautiful white basswood; but the man who set the machine made a mistake. Said I, "My friend, here are a couple of thousand sections made wrong. It cost me at least \$5.00. It is hard to lose so much, but I should be glad to sell the lot for 25 cts." He suggested that I could afford to do business that way, but he could not, because he was a poor man. Do you see the point, friends? I have been assuming responsibilities all my life in just this way, and it has not made me a poor man either. Do you not see that it verifies what our text tells us? People who rise, people who stand at the head of great lines of business, *have* to accept responsibilities. They are in the habit of standing in places of *terrible* responsibility every day of their lives. In asking about a recent railroad accident I was told that the engineer calculated on making his station with only one minute of time to spare. I was astonished, and inquired of a railroad man whether it was customary to run trains of cars with so little leeway (if that is the term) as only *one minute*. He said they did that, or very near it, "right straight along."

"But, my friend, where do they get *watches* that are so accurate that the officers all along the line can *know* that their timepieces do not vary more than that?"

"Well, I want to tell you, sir, that, at the present time on our great thoroughfares, they have *got* to provide themselves with watches that will agree with the standard time within a minute."

All these men are high-priced experts. If sickness or death, or any other accident, should prevent them from filling their places, a substitute would be provided, without any hitch or hindrance; and we have great railway companies that have trained men so perfectly for each appointment that they run trains daily for many years without single accident or loss of life.

Now, here in the first place we have a glimpse of the jewelers who sell watches and keep them in repair. Such watches cost a big price, and the man who repairs them must be steady and cool, and remember that the lives of hundreds if not thousands depend upon the fidelity with which he attends to little things. It is the same way with the engineer; it is the same way with the conductor; it is the same way with the train-dispatcher. Not only does their bread and butter depend upon their assuming responsibility, but the very lives of the great traveling public.

Of course, they get great pay, for such men are scarce. The world is full of people, of course, who say by actions if not by words, "Oh, well! I guess you had better get somebody else, if you are going to be so *very* particular as that;" and the consequence is, the whole world *does* get somebody else. They employ somebody who cares for consequences, and who values his reputation. Let us go back a little. If I were the village expert who painted all those blinds, when informed of it I would have paid friend Chamberlain damages, in order that I might learn better next time. If the village expert who spattered the floors and windows with his paint had any ambition he should also have made good his daubing, or paid somebody else for doing it. This other fellow that kept the wagon-shop, and put up a sign, and had to wait for wagon-spokes by *express* when he got a job, had better give up business and go and hire out

to somebody at a low price. The same way with the man who hadn't any lumber, and could not get it planed at the mill. The blacksmith who put the note in his pocket without reading it should have said, "Mr. Chamberlain, I confess I have been very heedless and careless; and if that trifling piece of stupidity has put you out to the extent of a ten-dollar bill here is the money to make you good." Friend C. would not have taken the money, I assure you, but he would have accepted the will for the deed; and instead of going to some other shop with his work, he and the blacksmith would have been steadfast friends *for life*, and very likely friend Chamberlain would have had *another* funny story to be told in his irresistibly comic way, at the farmers' institutes as he goes from place to place during the winter time, meeting the farmers of our land.

The men who run these great factories, and turn out good wagons made of honest material for less than the village workman often charges for *repairs*, have built up their business by doing just what I have been advising. They commenced away back years ago, by standing between their customers and loss. They showed that they loved their neighbor as themselves by saying, "Look here, my friend, this was no fault of yours at all: it was a blunder of mine, therefore I and not *you* will pay all the penalty."

You may remember that I once (years ago) opened a shop and put up a sign when the boots on my feet were not paid for, and I hadn't money enough in my pocket to pay for them. I advertised in the papers that, when repairing was not done at the time promised, there would be no charge. I kept ahead for quite a while; but the time came when I could not keep up with *all* my promises. One customer waited two hours while I finished cleaning his watch. When he took out his pocketbook to pay me I told him there was no charge, because I had failed in having it ready at the time specified. He protested at once, with a remark something like this: "No, no, my young friend. You have done me a good nice job, and did the best you could. Here: take your pay. It is true, I have been hindered a little, but this world is full of hindrances. Who ever heard of a mechanic undertaking to work for *nothing* because he got behind a little?"

Now, friends, that has been my experience from that day to this. Just as soon as you show this spirit in deal you make friends who will stand by you through thick and thin; and the majority of mankind will refuse to accept what you offer in a fair and generous spirit. The Bible is sparkling with these texts right in this line, besides the one at the head of our talk to-day. Just listen to a few of them: "Give, and it shall be given unto you;" "Cast thy bread upon the waters;" "Do good, and lend;" "He that findeth his life shall lose it; and he that loseth his life for my sake shall find it." Now, I wonder whether there is not some young man just starting in business who can catch inspiration from friend Chamberlain's talk to-day. Don't say you can't afford it. A young man once pied a form of type in our printing-office. In order to get the journal out on time he worked all night to make up for his mishap. When I offered to pay him for his night work he refused to take any thing. Did he lose money? Not at all. He was not a Christian *then*, but he became one *afterward*, and died trusting in the Lord Jesus Christ. Not only will such a course give us success and prosperity in this world, but, my friend, it oftentimes proves a stepping-stone to a *faith* in and an *appreciation* of the character of Jesus Christ, who first uttered the words, "He that is faith-

ful in few things shall be made ruler over many."



Good measure, pressed down, and shaken together and running over, shall men give into your bosom.—LUKE 6: 38.

We see by the *American Bee Journal* that the North American Bee-keepers' Association is now incorporated, and a legal body, known to the law, with headquarters at Chicago. It is well.

From late experiments made in the apiary, we are fast coming to the conclusion that the horizontal wiring (wires drawn loose) is the best plan of wiring frames. It is not only the simplest and easiest, but it gives the best combs, and you can use either heavy or light foundation, and get good results from both.

CHARLES BIANCONCINI, who sends us imported Italian queens, writes he can not send queens to this country by mail successfully. About half of them, he says, die before arrival. We think if he adopts our export Benton cage he will meet with general success. We will send him one, with the request to return it with a queen in it at our risk.

We have received samples of the Punic bees, from E. L. Pratt, of Beverly, Mass., in his very neat Benton mailing-cage. The bees are of a shiny black, and, so far as we have been able to judge from the sample sent, appear quite different from the ordinary black bees of this country—at least, a great deal more so than the Carniolans. We have ordered Mr. Pratt to send us a select tested queen, so that we may next year tell something about the bees and their qualities.

It will be remembered that there was some complaint on the part of the affiliated societies of the N. A. B. K. A., that it, the parent society, was failing to fulfill the conditions of the constitution in not providing medals. The committee appointed at the last meeting, of which Mr. Newman was chairman, has the matter in charge, and now we see by the *American Bee Journal* the medals are being stamped. They are to be used by the local societies in bee and honey departments, and at fairs and expositions.

Hip, hip, hurrah! We are having success with the Doolittle queen-cell cups. Nine-tenths of the artificial cups are now accepted by the bees, and built out into large handsome cells. Without this plan we should be short, at this time of year, of cells for queen-rearing. If everybody has as good success as we are now having, it is going to be a great boon to bee-keepers, from the fact that we can breed all, or almost all, queens from a choice mother, the best queen in the whole apiary, instead of a dozen or two as we were obliged to do by the old methods.

HENRY ALLEY, in the *American Bee-keeper*, argues that black Carniolans will very speedily develop the yellow tendency in the race; and, by way of proof, he urges a trial of the experiment. He says that in-breeding of black Carniolans will develop, sooner or later, bees with yellow bands. While it is true, that two of the imported Carniolan queens we had showed a

tendency toward yellow in their bees, yet it seems to us that, if Mr. Alley's theory were correct, there would be no such thing as black Carniolans at present, because the yellow tendency would, years and perhaps centuries ago, have obtained entire predominance and there would be no such thing as black Carniolans. As it is, most of the Carniolans we have ever seen or read about have been black.

OUR last importation of queens from Italy is entirely exhausted, except one breeding queen, which we must keep. Next lot of queens will not arrive until about the middle of September. We say this for the benefit of any who contemplate ordering of us. We shall be glad to fill orders next month when they arrive.

ON page 669 friend Cook starts a question which has often come up in my mind. He says the worm is about three days in spinning its cocoon, and that the thread of silk is one continuous fiber. About how long is this fiber, and how in the world does this feeble, sluggish worm manage to spin a fiber of such length in only *three days*? May be this thing is fully described in some of our books; but I confess I have never been able to find it. I think it has been said, that the worm rolls around, and this winds the silk about its body from head to foot. If this is true, in order to make this prodigious number of turns every 24 hours I should think it would need a crank and pulley so as to make it spin like a buzz-saw. Now, you knowing ones need not laugh, for I suspect there are others just as ignorant as myself. A. I. R.

DR. MILLER proposes, or, rather, advises, the expediency of another name for the "nameless bee disease." It is a shame that this misnomer has gained all but universal acceptance on this side of the Atlantic, for designating a peculiar malady that affects bees. Perhaps we are responsible in a great measure for it. At any rate, with the concurrence and agreement of the editors of other bee-journals, we propose to accept, as a better name, "bee paralysis" (*Bacillus depilis*). This is the name that is in use in England, I believe. By Cheshire it is called *Bacillus Gaytoni*. The termination *depilis* is descriptive, while *Gaytoni* is derived from a name—a Miss Gayton who called Cheshire's attention to it. We like *depilis* better, because it means *without hair* or *fuzz*, and this just exactly describes bees afflicted with *Bacillus depilis*.

AGAIN we are successful in mailing queens to the islands of the sea. In June we sent two untested Italian queens in our large export Benton cages to the Sandwich Islands. After a journey of about 4000 miles, overland and on the Pacific Ocean, a customer writes us that the queens were received in excellent condition. But, oh dear! he lost them in introducing. We suggest to all those who receive queens from such distances, that they introduce them by giving them frames of hatching brood. This method is perfectly sure. It is a little risky to hazard ordinary methods of introducing when queens have been received from such great distances. We have not yet heard from the queens sent to Australia; but for the present we say, "Score another one for the Benton cage." By the way, the postage on these two queens was only *three cents* each; and the postage on the same cages to our nearest postoffice, four miles from Medina, would have been *five cents* each. Here is a little inconsistency in rates that our postal authorities should equalize. In the name of common sense, why can't we be permitted to send a queen by mail to a point *four* miles distant as cheaply as we can send it to a point

four thousand miles distant? If the rates were reversed, there might be some reason; but as they stand, they are an anomaly.

YESTERDAY afternoon (the 13th), just as we had finished our work at the Shane yard, we saw a hive lying partly on its side. There had been a heavy wind and rain storm two days before, and we concluded that it had been blown over at that time. The hive contained Hoffman frames, fortunately; and when we came to examine it, what was the result? Why, nothing at all! The frames were inclined at an angle of about 45 degrees, but every thing was well, just as though nothing had happened. Now, suppose this hive had contained loose frames, what would have been the result? They would all have been jarred in together; brood would have been destroyed in consequence of the frames lying together in contact; combs would have been mutilated and disfigured, and many bees destroyed. Score another one for fixed frames. Although the storm had been terrific, there were no covers blown off. As we are not bothered with burr-combs, we use no enamel sheets. The consequence is, the covers are fastened down with propolis, and a light twist with a screwdriver easily removes them. Right here is where propolis serves a good purpose. It is far ahead of other sorts of clamps and castings for holding covers down. After replacing the cover you do not have to fasten it. The bees do it afterward for you.

DOCTORING WITHOUT MEDICINE.

I do not see but I shall have a new chapter in this matter. And if the grip that I have been having for the last two weeks is going to help me in studying up appliances whereby drugs and medicines may be dispensed with, I do not know but I rather (in one sense) rejoice in having the grip. After I had had it for three or four days I consulted one of the oldest and best physicians in Medina. I told him that I found it necessary to wear an overcoat and fur cap, even during August days, when the thermometer registered 85 in the shade. He asked me just one question: "Do you find that you are unusually sensitive to any sort of draft or chilly wind?"

"Well, I should think I *am* sensitive to drafts and chilly winds, doctor, especially if the wind happens to be in the north. Why, with more than my winter's clothing, as soon as a breeze starts up I involuntarily get behind the barn-door, or into some corner, before I attempt to even direct business."

He declared it was "grip" sure, and, after some more conversation he laughingly told me that he guessed I did not need any advice—that all I needed to do was to keep up the temperature by winter clothing, and to be *sure* that I did not get chilly. He suggested that quinine might *help* to keep up the circulation; but when I told him that I rather preferred overcoats to quinine, if it would do just as well, he said, "All right, go ahead with the overcoat."

Now, here is the result. Just as long as I keep warm enough to perspire sufficiently to keep my under-clothing a little damp, I feel pretty well. At night I keep bundled up in just the same way; but if I attempt to leave off my wraps, and my flesh gets dry, chills commence, and grip pains and something between neuralgia and pleurisy comes streaking along. Very likely different individuals are differently affected; but, my friend, just you try my plan of doctoring the grip without *medicine*. And, by the way, there are quite a few ailments along this line that yield quickly to bundling up until you perspire freely. There are some peculiarities of the treatment that I rather en-

joy. One is, that I can drink all the cold water I please all day long, without any bad effect at all. It passes off with the perspiration of the body; my appetite is also fair, and I can eat almost anything. The most inconvenient part of it is having people stare at me, wondering whether I am a crank or lunatic, with overcoat and fur cap, in August.

SPECIAL NOTICES.

STRAWBERRIES.

Under the influence of the recent heavy rains we have a full stock now of all varieties we advertise; namely, Bubach, Gandy, Haverland, Jessie, and Sterling.

AMERICAN PEARL ONION-SETS.

We have still a goodly quantity of these left, and now is the time to put them out—or, say, any time during this month and next. Remember, unlike the new onion culture the work is all done in the fall, and the onions are very much earlier than even those planted in the greenhouse and started out in the spring. For prices, see page 614 of our last issue.

EARLY PURITAN POTATOES FOR SEED.

A good many like our friend Johannsen (see page 682) have found it advisable to purchase their seed potatoes in the fall. Of course, we can not tell what prices will be in the spring compared with the present time; but as a rule, prices are much higher about planting time. For the benefit of those who would like to lay in Early Puritan, we offer them for 60c a bushel, or 75c if packed in the new slatted bushel boxes. Price per barrel, \$1.75.

PRICE LIST OF DOVETAILED WINTER CASES.

On another page you will find an illustrated article describing our new "dovetailed winter case," which please read and then note the following prices. The winter case, as in Fig. 1, includes the four boards forming the body, four pieces forming the rim, and four $\frac{3}{8}$ -inch-square pieces for the lower edge. The chaff cushion and padding, as shown in Fig. 3, when sent put up, include chaff; but in flat, the cushion is sewed up ready for filling, and the strips of burlap or cotton are included to make the padding, but no chaff is included. For ten-frame hives not over 16 inches wide, outside measure, the same winter case can be used without the sticks and padding on the side.

NAME AND DESCRIPTION.	Nailed and p'nt'd each	In flat each	Weight of 10
Dovetailed winter case .....	.50	.40	3 50 80 lbs.
Dovetailed chaff cushion and padding .....	.25	.20	1 50 5 "
Winter case with cushion and padding complete .....	.75	.60	5 00 85 "
Dovetailed telescope cover, shown in Fig. 6 .....	.35	.30	2 50 40 "
Rims for winter case .....		.12	1 00 20 "

DOVETAILED CHAFF HIVES.

By adding to the winter case a $\frac{1}{2}$ -inch inside body 8 $\frac{3}{4}$ inches deep, with double bottom and tarred paper, you have the material to complete the Dovetailed chaff hive as shown in Fig. 4, where a super and cover are also added. This makes the simplest and cheapest winter hive ever offered for sale. By adding to the price of the regular Dovetailed hive as listed, page 21 of our price list, 75c each nailed, 50c each in flat, or 40c each in lots of five or ten in flat, you get the price of the Dovetailed chaff hive complete, in the same combinations. The price of the separate parts will be as follows:

NAME AND DESCRIPTION.	N'd and p'd each	In flat each	Weight of 10
Dovetailed chaff hive, no cover or furniture	1 20	.80	3 50 6 50 150 lbs.
Inside body with bottom, $\frac{1}{2}$ inch thick .....		.25	1 10 2 00 40 "
Outside bottom $\frac{3}{8}$ inch with tarred paper and supports .....		.13	55 1 00 30 "
Outside body with sticks, no rims .....		.30	1 40 2 50 60 "
Rims for dovetailed chaff hive or winter case .....		.12	55 1 00 20 "

Black and Hybrid Queens For Sale.

For the benefit of friends who have black or hybrid queens which they wish to dispose of, we will insert notices free of charge, as below. We do this because there is hardly value enough in these queens to pay for buying them up and keeping them in stock; and yet it is oftentimes quite an accommodation to those who can not afford higher-priced ones.

75 hybrid queens for sale at 30 cts. each, 50 cts. for selected. Most are clipped and young.

CHARLES H. THIES, Steeleville, Randolph Co., Ill.

Nice hybrid and mislabeled Italian queens, 25 cts. each.

T. H. KLOER,
426 Willow St., Terre Haute, Ind.

I have 30 nice Italian queens, but mismated. They are nearly all extra fine, and part of them almost pure. Price 5½c each.

P. C. GRESS, M. D., Atchison, Texas.

Six mismated Italian queens for sale at 35c each, and 6 hybrid queens at 25c each.

LEWIS WERNER, Edwardsville, Ills.

I have 20 fine hybrid queens to ship by return mail at 35c each, and guarantee safe arrival.

W. A. SANDERS, Oak Bower, Hart Co., Ga.

A few hybrid queens for sale at 20c each.

LLOYD SECHRIST, Box 42, Pleasant Home, O.

Hybrids at 20c, and mismated Italians at 25c; most of them from imported stock.

C. G. FENN, Washington, Conn.

Six choice mismated young Italian queens, 20 cts. each.

F. C. MORROW, Wallaceburg, Ark.

STRAWBERRY GROWERS!

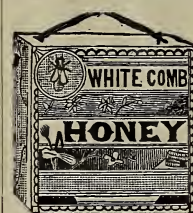
Try the Enhance. Very large, productive, and good shipper. Perfect flower. Begins to ripen as soon as Crescent; holds out with Gandy. Plants, postpaid, \$1.50 per doz.; Haverland and Bubach, 75c per 100. Address

16-17d
JACOB GUISINGER, Ada, O.

BY RETURN MAIL, 400

Golden Italian Queens. Tested, \$1.00 each; untested, 70c, 3 for \$1.80. HIVES, SECTIONS, FOUNDATION, and all BEE-KEEPERS' SUPPLIES kept in stock. Catalog free. JOHN NEBEL & SON, High Hill, Mo.

PASTEBOARD BOXES, OR CARTONS.



Bee-keepers are realizing more and more the value of these cartons for putting their comb honey in marketable shape. Other articles of home consumption are put up in a neat attractive way, and in shape to be handed to the customer, and carried safely without wrapping. Why not sections of comb honey, especially when the cost of the boxes is so low?

TABLE OF PRICES OF 1-LB. SECTION CARTONS.

Name or designation.	Price of 1	25	100	500	1000
1-lb. carton, plain20	.60	2.75	5.00	
1-lb. carton, printed one-side, one color, name and address90	3.50	6.00	
1-lb. carton, printed two or three colors, one side		1.00	3.75	6.50	
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A. I. ROOT, MEDINA, O.

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Plain, Practical, Scientific. Every farmer and bee-keeper should have it.

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AND ALL APIARIAN APPLIANCES.

Our Motto : Good Goods and Low Prices.

Catalogue free for your name on a postal card.

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FOR ALL OF A. I. ROOT'S APIARIAN SUPPLIES.
FOUNDATION is Our Own Make.**F. A. SALISBURY.**

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NEW FACTORY.

No. 1 Sections, \$3.50; No. 2, \$2.75. Fine Comb Foundation a specialty.

M. S. ROOT, 520 East Broadway,
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In responding to this advertisement mention GLEANINGS

A Four-Color Label for Only 75 Cts. Per Thousand.

Just think of it! we can furnish you a very neat four-color label, with your name and address, with the choice of having either "comb" or "extracted" before the word "honey," for only 75 cts per thousand; 50 cts. per 500, or 30 cts. for 250, postpaid. The size of the label is 2½ x 1 inch—just right to go round the neck of a bottle, to put on a section, or to adorn the front of a honey-tumbler. Send for our special label catalogue for samples of this and many other pretty designs in label work.

A. I. ROOT, Medina, O.**On Their Own Merits.**I am making a specialty of breeding **Golden and Albino Italian Queens.** My five-banded bees are equal to any as honey-gatherers, and they are the most beautiful and gentlest bees known. Warranted queens, May, \$1.25; six for \$6; after June 1, \$1; six for \$5. Satisfaction guaranteed. I have a few 3-banded tested queens at \$1 each.9tfdb **CHARLES D. DUVALL,**
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Please mention this paper**BEESWAX****FOR SALE.**—Crude and refined. We have constantly in stock large quantities of Beeswax, and supply the prominent manufacturers of comb foundation throughout the country. We guarantee every pound of Beeswax purchased from us absolutely pure. Write for our prices, stating quantity wanted. **ECKERMANN & WILL,**Bleachers, Refiners, and Importers of Beeswax,
5-16db **Syracuse, N. Y.**

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WE WILL BUY YOUR OLD COMBS.**F. A. SALISBURY, SYRACUSE, N. Y.**

Please mention this paper. 14tfdb

Tested Italian Queens.

By return mail, \$1.00 each. Hybrids, 20c; 6 for \$1.

J. A. GREEN, Dayton, Illinois.

Please mention this paper. 12tfdb

FIVE-BANDED GOLDEN RED-CLOVER BEES.If you want bees that will work on red clover, try one of our 5-banded queens. Queens in August, untested, 75 cts.; ½ doz., \$3.60; tested, \$1.50; select, \$2.00; the very best, \$4.00. Descriptive circular free. **LEININGER BROS.,**10tfdb **FT. JENNINGS, OHIO.****SECTIONS! SECTIONS! SECTIONS!**

On and after Feb. 1, 1890, we will sell our No. 1 V-groove sections, in lots of 500, as follows: Less than 2000, \$3.50 per 1000; 2000 to 5000, \$3.00 per 1000. Write for special prices on larger quantities. No 2 sections at \$2.00 per 1000. Send for price list on hives, foundation, cases, etc.

15 1tdb **J. STAUFFER & SONS,**
Successors to B. J. Miller & Co.,
Nappanee, Ind.

In writing advertisers please mention this paper

THE CANADIAN**Bee Journal**

Edited by D. A. Jones

75c. Per Year.

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These are published separately, alternate weeks, and are edited by live practical men, and contributed to by the best writers. Both Journals are interesting, and are alike valuable to the expert and amateur. Sample copies free. Both Journals one year to one address \$1. Until June 1st we will send either Journal on trial trip for 6 months for 25 cts.

The D. A. Jones Co., Ltd., Beeton, Ont.

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Books for Bee-Keepers and others.

Any of these books on which postage is not given will be forwarded by mail, postpaid, on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the bookseller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. I very much desire that those who favor me with their patronage shall not be disappointed, and therefore I am going to try to prevent it by mentioning all the faults, so far as I can, that the purchaser may know what he is getting. In the following list, books that I approve I have marked with a *, those I especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good.

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice, that you can judge of the size of the books very well by the amount required for postage on each.

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10 | Bunyan's Pilgrim's Progress**..... 35
20 | Illustrated Pilgrim's Progress**..... 75

This is a large book of 425 pages and 175 illustrations, and would usually be called a \$2.00 book. A splendid book to present to children. Sold in gilt edge for 25c more.

- 6 | First Steps for Little Feet. By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound, and fully illustrated. Price 50 c. Two copies will be sold for 75 cents. Postage six cents each.

- 5 | Harmony of the Gospels..... 35
3 | John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*..... 10

- 1 | Gospel Hymns, consolidated Nos. 1, 2, 3, and 4, words only, cloth, 10 c; paper..... 05
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- 5 | Same, words and music, small type, board covers..... 45
10 | Same, words and music, board covers..... 75
3 | New Testament in pretty flexible covers..... 5

- 5 | New Testament, new version, paper covers..... 10
5 | Robinson Crusoe, paper cover..... 20
4 | Stepping Heavenward**..... 18

- 15 | Story of the Bible**..... 1 00
A large book of 700 pages, and 274 illustrations. Will be read by almost every child.

- 5 | The Christian's Secret of a Happy Life**..... 25
8 | Same in cloth binding..... 50
1 | "The Life of Trust," by Geo. Muller**..... 1 25
1 | Ten Nights in a Bar-Room, T. S. Arthur*..... 03

- 5 | Tobacco Manual**..... 45
This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy that reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

- Postage | Price without postage.
5 | A B C of Bee Culture. Cloth..... 1 10
5 | A Year Among the Bees, by C. C. Miller..... 45

- 5 | Advanced Bee Culture, by W. Z. Hutchinson..... 50
14 | Bees and Bee-keeping, by Frank Cheshire, England, Vol. I. §..... 2 36
21 | Same, Vol. II. §..... 2 79

- or, \$5.25 for the two, postpaid.
Bees and Honey, by T. G. Newman..... 1 00
10 | Cook's New Manual. Cloth..... 90

- 5 | Doolittle on Queen-Rearing..... 95
2 | Dzierzyn Theory..... 10
1 | Foul Brood; Its Management and Cure; D. A. Jones..... 09

- 1 | Honey as Food and Medicine..... 5
10 | Langstroth on the Hive and Honey-Bee*..... 1 40
15 | Langstroth Revised by Ch. Dadant & Son..... 1 85

- 10 | Quinby's New Bee-Keeping..... 1 40
5 | Thirty Years Among the Bees, by H. Alley..... 35
4 | Success in Bee Culture, by James Heddon..... 46

- Handling Bees. By Langstroth. Revised by Dadant..... 8
Bee-keeping for Profit, by Dr. G. I. Tinker..... 25

- The Apiary; or Bees, Bee-Hives, and Bee Culture, by Thos. William Cowan..... 95
5 | The Honey Bee, by Thos. William Cowan..... 1 75
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- British Bee-keeper's Guide - Book, by Thos. Wm. Cowan, Esq., England's..... 40
3 | Merrybanks and His Neighbor, by A. I. Root..... 25

MISCELLANEOUS HAND-BOOKS

- 5 | A B C of Carp Culture..... 35
3 | A B C of Potato Culture, Terry**..... 35
This is T. B. Terry's first and most masterly work. The book has had an enormous sale, and has been reprinted in foreign languages. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. It has 48 pages and 22 illustrations.

- 5 | A B C of Strawberry Culture, by T. B. Terry and A. I. Root, 144 pages; 32 illustrations..... 35
5 | An Egg-Farm, Stoddard**..... 45
5 | Amateur Photographer's Hand-book**..... 70

- Barn Plans and Out-Buildings*..... 1 50
Canary Birds. Paper, 50 c; cloth*..... 75
Draining for Profit and Health, Warring..... 1 50

- 5 | Eclectic Manual of Phonography; Pitman's System; cloth..... 50
6 | Fuller's Practical Forestry*..... 1 40
10 | Fuller's Grape Culturist**..... 1 40

- 10 | Farming for Boys*..... 1 15
This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

- 7 | Farm, Gardening, and Seed-Growing**..... 90
This is by Francis Brill, the veteran seed-grower, and is the only book on gardening that I am aware of that tells how market-gardeners and seed-growers raise and harvest their own seeds. It has 166 pages.

- 10 | Gardening for Pleasure, Henderson*..... 1 40
While "Gardening for Profit" is written with a view of making gardening pay, and reaches a good deal on the pleasure part; and "Gardening for Pleasure" takes up this matter of beautifying your homes and improving your grounds without the special point in view of making money out of it. I think most of you will need this if you get "Gardening for Profit." This work has 366 pages and 134 illustrations.

- 12 | Gardening for Profit, new edition*..... 1 85
This is a late revision of Peter Henderson's celebrated work. Nothing that has ever before been put in print has done so much toward making market-gardening a science and a fascinating industry. Peter Henderson stands at the head, without question, although we have many other books on these rural employments. If you can get but one book, let it be the above. It has 376 pages and 138 cuts.

- Gardening for Young and Old, Harris**..... 1 25
This is Joseph Harris' best and happiest effort. Although it goes over the same ground, occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

- 10 | Garden and Farm Topics, Henderson**..... 75
Gray's School and Field Book of Botany..... 1 80
5 | Gregory on Cabbages; paper*..... 25

- 5 | Gregory on Squashes; paper*..... 25
5 | Gregory on Onions; paper*..... 25
The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

- 10 | Household Conveniences..... 1 40
2 | How to Propagate and Grow Fruit, Green*..... 25
2 | Injurious Insects, Cook..... 25

- 10 | Irrigation for the Farm, Garden, and Orchard, Stewart*..... 1 40
This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills, to take the place of rain, during our great droughts, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

- 3 | Maple Sugar and the Sugar-bush**..... 35
By Prof. A. J. Cook. This was written in the spring of 1887 at my request. As the author has, perhaps, one of the finest sugar-camps in the United States, as well as being an enthusiastic lover of all farm industries, he is better fitted, perhaps, to handle the subject than any other man. The book is written in Prof. Cook's happy style, combining wholesome moral lessons with the latest and best method of managing to get the finest syrup and maple sugar, with the least possible expenditure of cash and labor. Everybody who makes sugar or molasses wants the sugar-book. It has 42 pages and 35 cuts.

- 1 | Poultry for Pleasure and Profit**..... 10
11 | Practical Floriculture, Henderson*..... 1 35
Peach Culture, Fulton's..... 1 50

- 10 | Profits in Poultry*..... 90
10 | Small-Fruit Culturist, Fuller..... 1 40
10 | Success in Market-Gardening*..... 90

- This is a new book by a real, live, enterprising, successful market-gardener who lives in Arlington, a suburb of Boston, Mass. Friend Rawson has been one of the foremost to make irrigation a practical success, and he now irrigates his grounds by means of a windmill and steam-engine whenever a drought threatens to injure the crops. The book has 208 pages, and is nicely illustrated with 110 engravings.

- Ten Acres Enough..... 1 00
The Silo and Ensilage, by Prof. Cook, new edition, fully illustrated..... 25

- Talks on Manures*..... 1 75
This book, by Joseph Harris is, perhaps, the most comprehensive one we have on the subject, and the whole matter is considered by an able writer. It contains 366 pages.

- 2 | The Carpenter's Steel Square and its Uses..... 15
10 | The New Agriculture; or, the Waters Led Captive..... 75

- 2 | Treatise on the Horse and his Diseases..... 10
3 | Winter Care of Horses and Cattle..... 40

- This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in the book. It has 44 pages and 4 cuts.

- 8 | What to Do and How to be Happy While Doing It, by A. I. Root..... 50
3 | Wood's Common Objects of the Microscope**..... 47

A. I. ROOT, Medina, O.

WINTER BEES SAFELY CHEAP

—BY USING OUR—

New Outside Winter-Case

on your Dovetailed hives, or with our

NEW THIN-WALLED HIVE.

The outside case, with either a regular Dovetailed hive or our Thin-Walled Hive, makes the **CHEAPEST** and **SAFEST** winter hive made—and our Thin-Walled Hive is the **Cheapest** and **most Convenient**. It is same size as the 8-frame Dovetailed hive, and contains the same inside furniture. Send for special illustrated circular. Address

The W. T. Falconer Mfg. Co.
JAMESTOWN, N. Y.

Catalogue of all bee-supplies, and sample copy of **AMERICAN BEE-KEEPER**. (The Am. Bee-keeper is a 24-page monthly, 50c a year.)

Send to this advertisement for other GLEANINGS.

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Half a Million Pounds Sold in Thirteen Years. Over \$200,000 in Value.

It is kept for sale by Messrs. T. G. Newman & Son, Chicago, Ill.; C. F. Muth, Cincinnati, O.; Jas. Heddon, Dowagiac, Mich.; O. G. Collier, Fairbury, Neb.; G. L. Tinker, New Philadelphia, O.; E. Kretschmer, Red Oak, Ia.; P. L. Viallon, Bayou Goula, La.; Jos. Nysewander, Des Moines, Ia.; C. H. Green, Waukesha, Wis.; G. B. Lewis & Co., Watertown, Wis.; J. Mattoon, Atwater, O.; Oliver Foster, Mt. Vernon, Ia.; C. Hertel, Freeburg, Ill.; E. T. Abbott, St. Joseph, Mo.; **E. Lovett, San Diego, Cal.**; **E. L. Gould & Co., Brantford, Ont., Can.**; Page, Keith & Schmidt, New London, Wis.; J. Stauffer &

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It is **the best**, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year.

SAMPLES, CATALOGUE, FREE TO ALL. SEND YOUR ADDRESS.

1852

LANGSTROTH ON THE HONEY-BEE. Revised.

1891

Those who wish a book in which they will find, without difficulty, whatever information beginners desire, should send for this work. Its arrangement is such that any subject and all its references can be found very readily, by a system of indexing numbers. It is the most complete treatise in the English language.

—A FRENCH EDITION JUST PUBLISHED.—

HANDLING BEES, PRICE 8 CTS.

is a chapter of the Langstroth revised, and contains instructions to beginners on the handling and taming of bees.

Bee-veils of Best Imported Material. Samples **FREE**. Smokers, Honey Sections, Extractors, Tin Pails for Honey, etc. Instructions to Beginners with Circular, Free.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ill.

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